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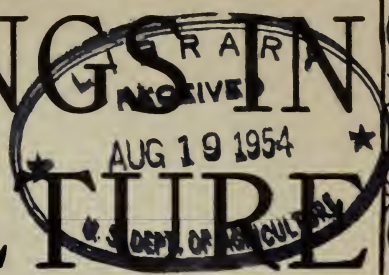
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GLEANNINGS IN BEE CULTURE

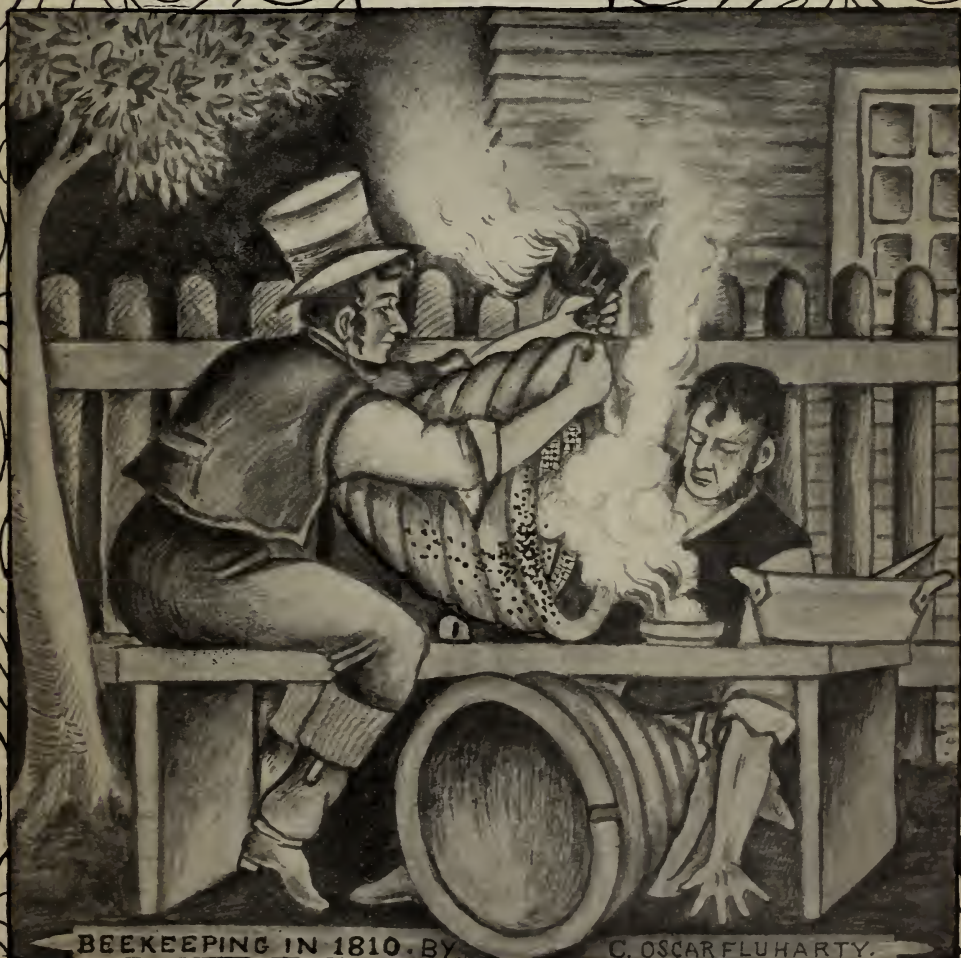


VOL. XXXVIII.

JANUARY 1,

No. 1.

1910.



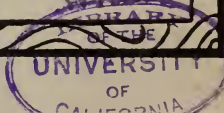
BEEKEEPING IN 1810. BY

C. OSCAR FLUHARTY.

PUBLISHED BY

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.

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Index to Gleanings in Bee Culture

Volume XXXVIII

In using this index the reader should not fail to note that it is divided into five departments, namely, General Correspondence, Editorials, A. I. Root's Writings, Contributors, and Illustrations. The index of General Correspondence includes everything except editorials and A. I. Root's writings.

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GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio

H. H. ROOT, Assistant Editor

E. R. ROOT, Editor

A. L. BOYDEN, Advertising Manager

A. I. ROOT, Editor Home Department

J. T. CALVERT, Business Manager

Entered at the Postoffice, Medina, Ohio, as Second-class Matter.

VOL. XXXVIII

JANUARY 1, 1910

NO. 1

EDITORIAL

By E. R. ROOT.

It takes but a glance at the cover design for this issue to bring to mind the fact that this is truly a wonderful age. It has been a long time since 1810, and with this thought comes the query: What will bee-keeping be like 100 years hence?

OUR INDEX FOR 1909.

THE voluminous index for the year 1909 gives promise of the extent and character of some of the good things we shall have for 1910. This index was prepared with the greatest of care by our editorial force, and our readers during the winter months will have an opportunity to go over some of the discussions of the past summer, taking them up by topic or otherwise as they may prefer.

THE ALEXANDER PLAN FOR CURING EUROPEAN (BLACK) FOUL BROOD.

MORE proof is beginning to accumulate to show that, in the case of European or black foul brood, the queen herself, and especially the kind of strain from which she comes, is apparently one source of infection. It would begin to seem that a combination of the McEvoy and the Alexander forms of treatment might be employed to great advantage. In some cases, at least, a modification of the Alexander treatment, killing the queen and requeening in three weeks, is sufficient to effect a cure.

In a matter of such paramount importance as this, GLEANINGS feels that it can not afford just yet to proclaim to the bee-keeping world that the Alexander form, or modified form of it, is going to bring relief. For the present, at least, we are seeking evidence, and wish to have the truth without favor or prejudice.

We shall have an article from a good bee-keeper and an old correspondent in our next issue that seems to favor the findings of Dr. Miller.

A SNUG WINTER; THE RELATION OF SNOW TO A WHITE-CLOVER FLOW NEXT SUMMER.

We have had about two weeks of severely cold weather, accompanied by a high wind. Mercury has been down as low as 3 or 4 de-

grees above zero, and much of the time about 10 degrees above. The weather is moderating somewhat, and the ground is now (Dec. 25) covered with snow. Dr. Miller reports good sleighing at Marengo, and consulting the newspapers we find that there is considerable snow all over the United States. This is a good omen for clover, for we have always noticed that, when the ground was covered with snow much of the year, if we do not have bad winter-killing and a late spring, we are almost sure to have a good clover crop, and a good yield of nectar during the following summer. An open winter we find, also, is apt to be destructive because of winter-killing. Clovers can stand a hard severe freeze; but an alternate freezing and thawing, with rains, sleet, and snow, tears the clovers, root and branch, resulting in what we call winter-killing. The best condition of all is a deep snow lasting a good part of the winter, and an early spring.

IMPORTATION AND FEDERAL CONTROL OF INTERSTATE SHIPMENTS IN BEES.

MR. HOLTERMANN, in his department on page 5, in referring to the question of subjecting bees to quarantine before entrance into this country, calls attention to a statement made in England that "The United States Board of Agriculture were most careful in their regulations to prevent the chance of conveying disease into that country." In the first place, there is no "United States Board of Agriculture" that we know any thing about. Undoubtedly the United States Department of Agriculture is meant; but the Department has no authority to make such "regulations" nor to enforce them if it had. The Bureau of Entomology, through its Apicultural Expert, Dr. E. F. Phillips, has suggested that Congress ought to pass a law to control the importation and interstate shipments in bees. Until Congress does take such action the Department of Agriculture is powerless to act. That Uncle Sam will have to exercise some sort of control is generally admitted. At present, minor legislation, such as a United States bee-disease law, will probably be sidetracked to let in something else involving larger interests.

The statement is also made that "foul brood is prevalent in Northern Italy." At the present time there are only very few queens sent from Italy into the United States, and what do come over are in long-distance mailing-cages. On arrival into this country

they are introduced into a nucleus or colony, and tested to determine their grade.

This detention in the yard of a queen-breeder would afford all the quarantine that would be needed to insure safety before sending out to the general trade.

The time will come when we should unitedly ask for a Federal law to control not only the importation of bees into this country, but interstate and territorial shipments of them. The time is not opportune for asking any thing of this kind just yet, but it will come later.

ARE ROBBER-TRAPS A NEEDLESS APPLIANCE IN A WELL-REGULATED APIARY?

MR. HOLTERMANN, in his department, page 5, thinks the user of robber-traps ought to be "trapped," or, in other words, he probably means that in a well-conducted apiary there should be no robbing, and therefore no occasion for a device of this kind. Our correspondent is a honey-producer, and possibly and probably is not familiar with the conditions surrounding queen-rearing yards. We have at our home apiary, as we believe, one of the most careful men we ever had; but every now and then his helper will be a little careless, and allow robbing to get started. If a bee once gets a taste of stolen sweets it will be almost sure to begin the business of following up or hanging around baby nuclei, and the sooner it is caught in a trap, the better for those babies. We venture to say that Mr. Holtermann probably has as much difficulty in getting help that will heed instructions about robbing as we do. If he can get a new man who will let no robbing get started he is doing better than we can. While a few robbers in a yard where honey is produced, and colonies are strong, cause no trouble, they are a perpetual nuisance and expense in a queen-rearing yard.

Again, there are other times in an extracting or comb-honey yard where it will be well to put a robber-trap in operation. This is especially true where the bees are located next to a highway. We have demonstrated to our satisfaction that robbers generally come from only one or two colonies. The old fellows in these hives teach the younger ones their bad tricks. Trap them once, and the power of a bad example is eliminated, and one can work among his bees with some degree of comfort.

FOUL-BROOD LEGISLATION FOR KENTUCKY.

THE bee-keepers of Kentucky are making a strenuous effort to secure some form of foul-brood legislation. Those who know the situation best think it would be impracticable to secure a State-wide foul-brood law, because the legislature would not appropriate the funds sufficient to pay a State-wide inspector, including his necessary expenses. They have, therefore, drawn up a bill that is based somewhat on the county law in Ohio.

This bill, in brief, provides that, when a petition is presented to the county judge in

any county in the State of Kentucky, signed by three or more bee-keepers, stating that certain apiaries within the county are affected with disease, said county judge shall appoint a bee-inspector. Said inspector shall inspect all colonies of bees, hives, and implements, and shall notify the owner if disease is found, and how to cure the same; that if the owner fails or refuses to apply the treatment, the inspector may order their destruction as a nuisance. There are other provisions that usually go with the ordinary foul-brood bill.

The funds for this measure are to be provided by a special tax of five cents for each colony owned in the State. The amount so collected shall constitute a special fund to be disposed of in the payment of the salary and actual expenses of the bee-inspector. It is also provided that said fund can be used in no other way.

This is, in substance, the form of the Ohio law, with two exceptions—1. Our statute imposes only a one-cent tax; and, second, if the funds so collected are not called for within three years they are to revert to the general fund. These two provisions make our Ohio law a practical dead letter. In the first place, the one-cent tax does not provide sufficient funds to pay an inspector, in the average county, for time and expenses to do his work in a satisfactory manner. In the second place, what little moneys do accumulate are very apt, by the three-year provision, to go into the general fund. About the time that foul brood is discovered, there are no funds available unless the disease breaks out before the expiration of the three-year limit; and even then, as we have explained, the funds are insufficient.

The bill that our Kentucky friends have drawn seeks to eliminate these two bad features. Drs. E. E. Corliss, of Brooksville, Ky., and M. A. Aulick, of Johnsville, Ky., would like to get in touch with all those who would co-operate in getting this bill enacted into law. Our Kentucky subscribers are requested to communicate with them at once.

THE WORK OF THE BUREAU OF ENTOMOLOGY ON BEE DISEASES FOR 1909.

IT may be of interest for us to present to our readers a brief account of the work of the Bureau of Entomology of the United States Department of Agriculture on bee diseases for the year 1909. This work was begun by Dr. E. F. Phillips as soon as he took charge of the bee-keeping work for the Bureau. He was fortunate in securing the services of Dr. G. F. White as bacteriologist. Dr. White is doubtless the best-trained and most experienced man at work on this important line of investigation, and he has already obtained results which have baffled bacteriologists for many years. The year just closed has been by far the heaviest in the history of this work.

In 1908 Dr. White established the cause of American foul brood to be *Bacillus larvæ*, and since that time he has been engaged in

a more detailed study of this bacillus for the purpose of applying knowledge of this germ to practical treatment.* He has also been at work on European foul brood, or "black brood," as it is sometimes called. It will be remembered by many of our readers that, at the Detroit meeting of the National Bee-keepers' Association, Dr. White mentioned another bacillus which he suspected might prove to be the cause of this disorder. This has not been fully proven yet.

During the summer of 1909 the Bureau asked for samples of diseased brood from all parts of the United States through the bee journals. Thousands of circulars were also sent out to correspondents, asking for samples where diseases existed. As a result, over 600 samples of brood were examined bacteriologically, bringing the total number which are recorded to more than 1000. At the Sioux City meeting of the National Bee-keepers' Association, Dr. Phillips showed two maps of the United States, giving the distribution of American foul brood and European foul brood as shown by these samples. These indicated that the two diseases are much more widespread than is usually supposed, and fully justify the position of the Bureau that there is no more important work to be done for American bee-keepers than an investigation of brood diseases. This information concerning the distribution of diseases is being used to send circulars to bee-keepers in infected regions as far as the limited office force will permit, but is of special value for use before legislatures which are being asked to pass foul-brood laws. We understand that the Bureau does not expect to publish this material, at least for another season, in order to make it more nearly complete; but we are sure that any committees which are to present foul-brood bills to their legislatures this year can obtain the available data for their own States by writing to the Bureau.

It is difficult for bee-keepers not trained in bacteriological work to reconcile the conflicting statements of various writers on this subject, or to understand what claims are fully proven. To help clear up this state of affairs Drs. White and Phillips have been at work on a paper in which all the important papers on the causes of bee diseases are reviewed and analyzed, and the claims examined in the light of our present knowledge of these subjects. We understand that this paper is to be completed within a short time, and we hope that it will clear up the present unfortunate confusion.

The bee-keepers of Massachusetts, Pennsylvania, New Jersey, Maryland, Kentucky, Alabama, Illinois, and Oregon are anxious to have foul-brood laws passed, and, as far as possible, in all these cases the Department has aided the bee-keepers in their efforts. In several cases the proposed bills have been partially or entirely drafted by the Bureau.

In asking for such laws the maps showing the spread of the two diseases are of much value, and this information is always given by the Bureau in such cases.

We understand that the Bureau makes it a rule not to write letters to State legislators urging them to pass such bills; and this is perhaps as well, for there might be a feeling on the part of some of these men that the federal Department was trying to dictate what they should do. If the Department furnished all the information which it has at hand to the committee of bee-keepers who are urging such bills, no more can be asked.

It will not do, however, for bee-keepers to rely entirely on foul-brood laws to control diseases. An educational campaign to inform the thousands of bee-keepers over the country is badly needed. The Bureau of Entomology is trying to do its share in this work. When a sample of diseased brood is received, a request is sent for names of other bee-keepers near at hand, and they are also sent a circular on brood diseases. Over 10,000 postmasters were also requested to send in the names of bee-keepers in their vicinities during the summer of 1909, and, as far as possible, circulars were sent to the persons whose names were received. The present appropriation of the Bureau for bee culture will not permit of the hiring of an office force large enough to carry on this work very extensively, but the force is used in this way as far as possible.

In the matter of treatment, the Bureau, we are advised, has not seen fit to change its recommendation of the shaking treatment. Experiments on the effects of various disinfectants on *Bacillus larvae* have been performed, and the effects of various drugs in syrup fed to diseased colonies have been studied. The results of some of these experiments are, we understand, to be published this winter. So far the results have not shown that the drug treatments, so much advocated in Europe, are of any value in practical work.

This result will not be a surprise to American bee-keepers. In a paper read before the National Bee-keepers' Association at Sioux City, Dr. Phillips outlined what is now known and what is not known about the treatment of bee diseases. He pointed out the necessity of a thorough knowledge of the causes of the brood diseases before any great advance can be made in treatment. This is, perhaps, a point which many do not realize; but it is evident that experiments based on such knowledge will give better results than the haphazard recommendations on drug treatments which have so often been made without a basis of facts.

Dr. Phillips announced at Sioux City that, during the season of 1910, the Bureau expects to continue the work on the distribution of the two diseases on a still larger scale. We hope that our readers will co-operate by sending in samples when the time comes to aid in this work which will prove so important to our industry. Let us see if we can not swamp the bacteriologist.

* There is some reason in support of the belief that this is what is called *Bacillus Brandenburgensis*, or *Bacillus Burri*, in Europe. See GLEANINGS, page 684, July 1, 1908.

STRAY STRAWS

BY DR. C. C. MILLER

REFERRING to last item, p. 786, I think the Dadants practice feeding candied honey, smearing it over the top-bars of brood-chamber.

BEFORE 1861 I suffered severely with rheumatism, and since then have had none. I began keeping bees in 1861. I don't know whether there is any relation between the two facts.

HUBER, I have a Quaker mill like yours, and am miller-in-chief to the Miller family. It's great to grind your own wheat, have all of the wheat in the flour, and know just what you're eating. And the gems from that whole-wheat flour! Yum! yum!

J. E. CRANE, it's true, as you say, p. 758, that bees often fill a center bait before strong enough to do much more; but another fact of more importance to me is that that prompter beginning in the center may make the difference between swarming and not swarming.

A MISTAKE is made, p. 727, in saying that hives 10 feet apart in the row and rows 10 feet apart makes hexagons. It makes squares. Put hives 10 feet apart, in the row, and rows 8 feet 8 inches apart, and you will have hexagons, the center of each hive being just 10 feet from the center of each of the surrounding 6 hives. If you put a pair of hives instead of each single hive, you will double the number of hives on the same ground, and be just as safe from bees entering wrong hives.

PRECONSTRUCTED queen-cells are the kind the bees prepare for a prime swarm, and I supposed the only kind. Now comes Adrian Getaz, a careful observer, who says, *American Bee Journal*, 367, that, after having destroyed queen-cells in a colony for two or three weeks, he found some whose bases showed that they were post-constructed, notwithstanding the presence of a laying queen. This, however, was not an entirely normal case of preparation for a prime swarm, as the swarming fever had been intensified by the destroying of previous queen-cells.

J. L. BYER, you seem to be somewhat off in your ideas, p. 780, of what I've been doing. I haven't abandoned feeding thin syrup in the fall, for I never did it. All that I ever did of that was experimentally on a small scale fairly early. Neither would I feed late any thing so thin as two-to-one. I've fed barrels of sugar for winter, but always two and one-half to one, and I wouldn't risk feeding it without acid. I don't know from experience about the two-to-one. No, at present I'm "not mixing honey with the feed." Just now I don't recall ever mixing an ounce of honey that way.

THAT BEES aid in the fertilization of fruits is, of course, well known. That they aid fruits to resist frost is new to me. But that

is just what was claimed in a conversazione, *British Bee Journal*, 413, and with the explanation given it looks reasonable. It is well known that a blossom remains fresh a considerable time awaiting fertilization, and then promptly dries up. Well, during that "awaiting" time the stigma is tender, easily affected by frost; but when dried up the little fruit is resistant. So with plenty of bees there is less danger from frost. [This looks reasonable and we believe it is true.—ED.]

NONE OF MY funeral whether field bees unload in supers or brood-chamber; but it's hardly proven, p. 763, that it's always in supers. That "suppose" 15 pounds a day coming in, and all cells already filled, might be answered by the question, "Does that happen?" At any rate, when honey comes in 12 pounds a day you can always shake thin honey out of the brood-combs by the pound. And there's no need for 12 pounds in the brood-chamber, for some of it could be carried up soon after being brought in. If field-bees go straight to the supers it seems they might take their pollen there too, instead of dumping it in the brood-chamber.

"THE CANDY-BILL of Uncle Sam is \$130,000,000 a year," says the *Baltimore News*. "It is said by experts that the enormous increase in the use of candy is the direct outcome of a corresponding decrease in the use of alcohol. Alcohol destroys the taste for sweets, and correspondingly the heavy candy-eater is not likely to be the person who has a strong liking for whiskey, beer, or wine. In the last few years the admitted gain of sobriety among all classes of people has had the effect of adding to the business of the candy-maker by leaps and bounds." All of which is good—very good. Now let the word go out that it would be still better if honey should replace three-fourths of the candy.

LOUIS SCHOLL, p. 757, I don't want to get "a good swat" along with the editor, and so I'd like to come to an understanding. It's a matter of serious practical importance. The belief of some is that the diameter of a cell is constantly lessened by the addition of cocoons to the side-walls, and so no comb more than five years old should be used. I believe that a comb may be used for 50 years or more. There is a constant thickening of the midrib, and a constant deepening of the cell to compensate for it, so that the diameter of the cell always remains sufficient for a full-sized bee. Of course there may be such a thing as such close spacing or such a thick midrib that the depth of the cell is too little for a full-sized bee. But I don't believe it ever happened that a cell of full depth was made too narrow by cocoons for good use. Your bees were dwarfs, not because of the diameter, but the depth of the cells. Neither the editor nor I thought the bees could spread the combs; but we thought the bees could spread the combs; but we thought you were equal to the task, and that if you would do so you would get bees of full size. By the way, that ½-inch midrib must be about 100 years old.

NOTES FROM CANADA

BY R. F. HOLTERMANN.

QUEENS FROM EGGS.

Page 490, GLEANINGS, I believe you are right, Dr. Miller. When a colony has a queen the bees rear queens for swarming or for superseding from the egg.

SOUND REASONING.

F. P. Adams, at the recent Ontario convention, stated that artificial swarm control and artificial stimulation should go hand in hand with queen-rearing. He asked where queens would come from when swarming stopped. I share the view expressed by Mr. Gill, in the *Bee-keepers' Review*, page 373, "extensive bee-keepers can't afford to rear many queens," for I have largely bought them.

ROBBER-TRAPS.

Mr. D. M. Macdonald, in the *British Bee Journal*, page 388, in commenting on these contrivances, pities the poor innocent bees that get trapped with the marauders. In commenting on this, D. G. Taylor, page 397, states, "I think the sympathy is entirely wasted, as the bees which enter a robber-trap, which generally takes the form of a hive, are bees that have the tendency to become robbers." No doubt the bees "have the tendency to become robbers"—all bees have that tendency, and therefore such a trap is a folly which I have never heard of in Canada or the United States. The fault lies with the bee-keeper. Trap him. [See editorials.]

A NEW SITUATION IN CANADA.

At Welland there is a smelter for reducing silver ore from cobalt. In that section the bees have been almost wiped out. Some have lost all; others less. An average report is 6 left out of 45. Some attribute it to the smelter, others to large hornets which have been seen fighting bees at the entrance of the hive. Here is a problem for the government apiarist. The president of the Ontario Bee-keepers' Association, at the recent convention, stated several times that the government had given all that the association asked for. Does our faith fall short of what we might get? Let us ask for first-class equipment at the Ontario Agricultural College, and we shall likely get it.

BEEES FERTILIZE BUCKWHEAT BLOSSOMS.

During my visit to the Ontario Government Jordan Harbour Fruit Station I noticed a patch of buckwheat, partly enclosed to bar access by the bees and other insects. I at once judged that another long-hoped-for wish that the Ontario Government would carry on investigations in the fertilization of blossoms by bees was beginning to take shape. No doubt the station's first report will be to the Minister of Agriculture, the Hon. J. S. Duff; yet that did not prevent me from adjusting my eye to a small opening

available, and finding that the uncovered buckwheat had at least one third more buckwheat seeds than the covered. The horticultural official at my side, in response to my quick verdict, confirmed my opinion.

SHALL BEES BE SUBJECTED TO QUARANTINE IN ENGLAND?

In the *British Bee Journal*, page 433, Mr. Reed, at the British Bee-keepers' Association conversation, stated that foul brood "was so prevalent in Northern Italy that bee-keepers took no notice of it." Then follows a discussion as to the advisability of stopping the importation of queens from this country, subjecting the bees to quarantine. As Mr. Reed states that, with foul brood in the hive, the bees were able to put up with it (the disease) and live and produce honey, I should say if this be true by all means get these bees; but I fancy there is a mistake somewhere. Mr. Reed also states, on the same page, "The United States Board of Agriculture were most careful in their regulations to prevent the chance of conveying disease into that country." If there are such regulations, will the editor of GLEANINGS kindly let us know what they are? I know of none. There is sometimes a difficulty in getting reliable information, especially from a distance. [See editorials.]

The Isle of Wight bee disease appears to have practically wiped out bee-keeping on that island.

THE PLACE FOR EMPTY SUPERS.

On page 490 Dr. Miller says that, when he puts empty section-supers under a partly filled one in a waning flow, the bees keep on with the super above and leave the empty super untouched. Yes, they may even complete a partially filled section and not touch the neighboring one. This is particularly true when separators are used. Whether it be a comb-honey super or an extracting-super with foundation that is put between the brood-chamber and the super already in use, I find that, with a moderate honey-flow, the tendency is to take no more honey through this empty super than necessary, and, therefore, to crowd more honey into the brood-chamber at the expense of room for brood-rearing. Now, when I add extracting-supers, and can spare the time, I take some of the nearly filled frames from the super already on the hive, put in their place empty combs, and place the new super on top with the combs which have been in use in the place formerly occupied with empties. I also take care to put the empties in the top story above the empties in the lower. This establishes an old or already accepted connection between the upper and lower story, and it makes less of a break in the interior of the hive; and I prefer it very much to leaving all new comb in one super, either next to the brood-chamber or on top. Where more than the number of supers mentioned above are in use I seek to place the frames nearest full in the top super or supers.

BEE-KEEPING AMONG THE ROCKIES.

BY WESLEY FOSTER, BOULDER, COL.

SAWED VS. SPLIT OR SLICED SEPARATORS.

The scalloped wood separator is subject to hard usage in comparison to its strength. The scalloped edges break off very easily, and great care must be used in wedging up supers, removing honey from them, and in cleaning the separators. The most breakage comes in scraping off wax and propolis. A wood separator, to be of service, should be sawed and not split or sliced; it should be free from knots and decayed wood, and thick enough so that there will be about fourteen to the inch. Some run as high as eighteen; but this is too thin, and the scallops will break off almost of their own volition. A good time to compare the merits of a sawed and a split separator is after a lot of them have been wet. The sawed separators come back into shape fairly well, while the split separator will remain warped, and, if bent into shape, will likely break.



I do not agree with the ideas of Mr. Trickey, as given on pages 722 and 723, Dec. 1, that comb-honey cases are made too strong. The single-tier wood case is not protection enough for the honey. The freight-handlers have so many goods to move that often no time can be had to move goods slowly. This is not as we would wish; but we shall have to do the best possible, and continue to fight for more careful handling of fragile goods. The railroads out this way have claims for breakage on a very large percentage of the local shipments of comb honey. The breakage is caused by careless freight-handlers, packing in cars with heavy goods, and by hard bumping of cars when switching. The rate on comb honey will no doubt be raised if more fragile cases are used. Comb honey is not packed in as heavy crates as other goods of light weight and fragile character.

Neither do I think the grading-rules draw the lines too fine or specify too many grades. The rules could be improved; but adopting the "individual" methods would destroy all standards to go by. The development of the modern methods of distribution of fruit and produce has given rise to the grading-rules established by associations of fruit-growers and producers. Take the sections of the country that have distinguished themselves by a certain high quality of product like the Rocky Ford melon or the Hood River apple. These names have been made by the growers combining, and establishing rules and shipping a uniform product.

The apples that are shipped from the West and Northwest have six grades for each variety of fruit—three for size and three for color. That makes more grades than we have in comb honey, and we can not do better than take the hint from the most successful marketers of fruit. There are no pro-

ducing sections of the country in either fruit or honey that have established a name for quality that have not adopted uniform rules for grading and packing, and shipped the goods through producers co-operating to make carloads or organizing an association to do the work.



COLORADO BEE CONVENTION.

The convention has come and gone, and a good meeting it was too. Often I would hear some one say, "Before another year goes by I am going to observe along that line myself." This is the benefit of a bee convention. By rubbing ideas together we refine our own and get a few additional good ones. Mr. Dyer gave some of his ideas on overstocking bee territory that caused some little discussion. He said he believed that, unless there were bees to gather the nectar as secreted by the bloom, the nectar would dry up and form a hard scale that would stop the secretion entirely. His idea was that the bloom yields nectar for quite a few days, and that the bees get a large amount, comparatively, from each corolla if it is kept empty by the visiting bees. Prof. Gillette said it was the rule for nectar to cease as soon as the flower became fertilized. This, in a large measure, would discount the possibilities that Mr. Dyer spoke of, though he has six hundred colonies in one location at the present time. We shall hope to know more of the outcome later on when he has given the theory a thorough test. The supply of pollen is a more serious matter here in the spring than the lack of nectar in the summer, though we have experienced the lack of both lately oftener than is desired.

If flowers can be bred up so that the nectar will flow before and after fertilization we shall be well out on the road to more profit from the bee. The cow gives milk out of season (according to the requirements of nature), and we hope the flowers will overstep nature a little for us.

Wilbur F. Cannon, Pure-food Commissioner, gave a talk on the pure-food law and its relation to honey. He expressed his desire to have the bee-keepers co-operate with him in stamping out any adulteration or misbranding of honey.

The most interesting feature of the convention was the lecture by Prof. Gillette on the anatomy of the honey-bee, illustrated with stereopticon slides. The honey-bee is the highest in the scale of all the members of the insect kingdom as man is in the animal. The reason for the classification of the bee at the top of the scale is because she possesses the greatest number of special organs. It is interesting to know that man and the bee have been so closely connected since the dawn of history. Alike in their tastes, social organization, and desires, wherever man has planted trees, flowers, and gardens, there you find the bee. The charm of Prof. Gillette's lecture was the genial personality of the man shining through it all.

* Mr. Trickey referred to carriers or crates, and not single or double tier shipping-cases.—Ed.]

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

THE VARIATION IN THE BLOSSOMING OF THE BASSWOODS.

It was with more than usual interest that I read what Messrs. W. J. Green and A. I. Root had to say about the basswoods on page 442 of the July 15th number of GLEANINGS, as I have been brought up with the basswoods during the whole of the 63 years of my life. Among the first recollections of the old childhood home is one of my father showing mother a bunch of basswood blossoms and describing their beauty and sweetness to her, while the next spring a tree of this variety was set out near the corner of the house in which I was born. This tree is now some forty feet tall, and nearly or quite three feet in diameter. Later on, father built for himself another home, and in the spring of 1869 set out two basswood-trees about twenty feet from the house, while in the spring of 1874 another tree was set about 100 feet away, at the roadside, as an ornament and for shade to "any weary traveler" who might pass along the public highway, as my father always considered the basswood as the prettiest and nicest of all trees for shade. The two trees nearest the house are now nearly six feet in circumference; but the one by the roadside has not attained so large a growth, being only about $4\frac{1}{2}$ feet around the trunk. I have thus described these trees so that the reader can the better understand what I am about to say further.

The tree first planted at my childhood home is a mid-season bloomer, and so gives me a certain understanding that the season for basswood nectar is half gone; and during all of my bee-keeping life of forty years it has guided me in not expanding my operations for section honey, but, after this bloom, to begin to contract the surplus apartment to the hives so that the season would not close by having a whole lot of unfinished sections on my hands with only a few salable ones.

One of the peculiar things about the two trees planted in 1869 is that one of them never blossoms at all while the other blossoms every year, and generally in the greatest profusion, with bees at work on it at all times when it is in bloom, while many times the tree at the old homestead will not have a bee on it, and that with the old homestead not 400 feet away. But the part which will interest Messrs. Green and Root is this: That profuse-blooming and always nectar-secreting tree is the earliest bloomer of all the basswoods about here, so all I have to do is to step out 20 feet from the door of the house to know when the earliest nectar from basswood can come in the hive. I notice that Mr. Green says that the European linden was in full bloom at Wooster, Ohio, on July 5, while Mr. Root says that the common basswood was in bloom at Medina, Ohio, on July 6. Well, this very earliest-blooming tree

opened its very first buds on July 12, and was not in full bloom until July 16, 17.

By looking at my atlas I find that Wooster, Ohio, is about 15 miles south of latitude 41, and that Medina is about 10 miles north of the same parallel, while I am about 10 miles south of parallel 43: hence Mr. Green is about 125 miles further south than Borodino, and Mr. Root only about 100 miles. It would hardly seem that a distance no greater than that would allow of so great a variation in the time of basswood bloom, and especially as Mr. Green says that the European variety is ten days later than our American.

I wish to tell the reader of something a little strange: That tree set by the highway in 1874 proved to be the *latest* bloomer of any of the basswoods hereabout; and now this day as I write, July 24, it is bursting its first buds just twelve days later than the very earliest, so that I have right under my observation not only the *first* bloom but the *last*, and thus during the most of my bee-keeping life I could tell at a glance about the probable flow of nectar from the basswood, and govern all operations with the bees in accord therewith. Here I have a difference of 12 days in the time of the blooming of our basswoods, all, so far as I know, of the same variety, while Mr. Green gives only ten days as the difference between the American and European; and this difference is not on account of the later-blooming tree growing "in dense shaded pieces of woodland," as Mr. Root suggests, for all of the four trees spoken of grow right out in "the open," separated from all other trees of any kind or nature. I have just come from the north side of a 12-acre woodlot in which some 300 basswoods grow, where I went before writing this, to see if I could find any thing later there; but there I found only two trees as late as the one by the roadside; and as the earliest bloom is gone and the latest just opening, with the others varying all the way between, basswood can be said to be "in full bloom" at Borodino, N. Y., on this the 24th day of July, while the ten day later European variety was in full bloom at Wooster, Ohio, on July 5. Surely this is a great and varied country, and I realize more and more, as the time passes, that locality does play a very important part with those whose occupation consists mainly of apiculture.

ANIMATED EGGS, ETC.

In adding a little further to the animated-egg question, let me state that I have for years tested my eggs in warm water, as H. F. Hart mentions on page 417, July 1. All eggs that sink after a fortnight's incubation are of no value; but those which float and are individually seen to wobble (not with any movement of the water) are, of course, alive. A minute or two should be ample time for the chicks to wake up, but they generally begin to bob almost directly, and I have thought the wetting good for them, so long as they were not chilled. But by your instructions I have made a "Root egg-tester," with which I have watched a batch of eggs daily, right through the hatch, and it is simply splendid, so I'll have no further use for warm water in that direction. Thanks for that good article, which is but one among many equally valuable.

Auckland, N. Z., Aug. 16.

S. C. RHODES.

GENERAL CORRESPONDENCE

EUROPEAN OR BLACK BROOD.

Some More Evidence Tending to Show
that Requeening after the Alexander
Plan will Effect a Cure.

BY DR. C. C. MILLER.

I have an interesting letter from John T. Greene, Interlaken, N. Y., who has been doing some things hardly according to orthodox teaching in his dealings with black brood. He says:

I had six yards the past season in which nearly every colony had the disease. We started in to shake every diseased colony; but when one man, with only his wife to help, undertakes to shake about 300 colonies and care for a yard 50 miles away at the same time, he has got to go some.

We had to shake at "any old time" while daylight lasted, and then found we couldn't quite catch up. At the beginning we disinfected our hives, burning them out with a painter's torch. We also had lots of other work to do while caring for the bees.

Well, to make a long story short we began to requeen with young Italian queens (most of my bees were blacks or hybrids). We then began to wonder if the young queens would not do the business and save us a lot of work. You see we were getting tired, and wanted help. So we began to requeen and leave all the old combs in the hive, and were greatly pleased to find about 95 per cent of the colonies thus left without a trace of the disease at the close of a very light buckwheat flow.

He explains that one thing that led to a trial of this sort of treatment was the fact that the previous year a colony in very bad condition had had a young queen given to it, and some time later he was surprised to find that not a diseased cell was to be found in the hive. He also says that where a colony was weak, or did not clean up, two were united, the stronger being placed on the weaker.

Of course, as he says, it is too soon to say that there may be no return of the disease; but the plain facts that he gives are none the less valuable.

After knowing what a scourge black (European) foul brood had been in the State of New York, I had had some question whether it were not in a milder form in Illinois. According to Mr. Greene's letter there is probably no difference.

According to the teachings of Mr. Alexander, the two essential things in the treatment are, first, strength of colony; and, second, a term of queenlessness. Perhaps he would stipulate a third, the giving of a young Italian queen. My own experience confirmed, and emphasized the importance of having colonies strong. But instead of having a colony entirely without a queen for three weeks I would give it a virgin at the end of ten days. Now comes Mr. Greene, who believes in strong colonies, but who makes no mention of any time of queenlessness—merely requeens. At any rate, when a strong colony was requeened a cure followed in 95 per cent of the cases.

The question arises, is the queen diseased or at fault in any way? and is the mere change of queen all that is necessary? It looks just a little that way. A number of times my assistant, upon looking at the queen of a bad colony, said, "How logy that queen appears!" And one out of five of the queens disappeared not many days after being thrown on foundation. It was not superseding; generally no queen-cells were started until after the disappearance of the queen. Were the foul brood bacilli in the body of the queen? If so, they were not in the eggs, for the brood from these eggs was in all cases healthy. Yet it seemed that in some way the queens were weak, and perhaps their worker progeny were correspondingly weak, making a change of queens favorable to recovery.

Yet it is possible that it was not a mere change of queens in the case of Mr. Greene's treatment. It must be remembered that generally, when a queen is introduced, there is a break in laying—practical queenlessness—for a day or more, and perhaps for several days. Even when the new queen begins laying, she is not up to her full count for some time, and a diminution in the amount of brood ought to give the bees a better chance to clean up.

This much seems clearly established: That bees are able to clean out a certain number of cells in European (not American) foul brood. It also seems nearly proven that bees in good heart will clean out all, if there is not too much for them to do, and that a stoppage or diminution in egg-laying diminishes the number of foul cells to be cleaned up; and increases the chances for cure. A practical question is: "How long should a colony be queenless to give it a fair chance to clean up?"

Mr. Alexander's rule was to leave the colony queenless for three weeks. But if I understand the matter correctly, Mr. Alexander had hardly gone beyond the experimental stage, and it is possible that he never tried any shorter time than three weeks. Perhaps he reasoned in this way: "It takes three weeks for all brood to hatch out, so that's the time for the colony to be queenless." But it is just possible that there is little or no chance for conveying the disease from a cell that is sealed, and that eight or ten days' queenlessness will serve the purpose just as well as three weeks. And if there be not too much cleaning up to do, it seems reasonable to believe that even less than eight or ten days may answer, when we take into account Mr. Greene's experience, and also the fact that a number of my colonies that were mildly affected cured themselves without any interference on my part.

Let me give one example of self-cure. No. 100 was foul-broody, but not very bad. July 16 I put an excluder on the hive, and then piled on it four or five (I think five) stories of foul-broody combs. Aug. 13 I took away the upper stories, out of which, of course, all brood had emerged, and then opened the lower story in order to treat it.

To my great surprise, not a single diseased cell could be found in the hive!

Marengo, Ill.

[This is all very interesting. We should be glad to get reports from one or more of the York State inspectors who have had a large experience with this disease.—Ed.]

EUROPEAN FOUL BROOD.

Will the Disease Reappear Among Dr. Miller's Bees?

BY F. H. HARVEY.

I have just been reading Dr. Miller's article in the Dec. 1st issue on his experience with black or European foul brood. I note what he says about shaking the bees directly on full sheets of foundation without putting them on starters first. I have tried it, and have had the black brood reappear in a good many cases. I have also had it reappear when swarms from diseased colonies were hived on starters, both when given the partly filled section-super and when given an entirely new one. This is most apt to occur when the bees are dark or have a queen that is not first class.

If Dr. Miller's experience is like mine he will find more or less of his treated colonies showing diseased larvæ early next spring. If the colonies are reasonably strong, and the queens good young Italians, the disease will disappear from most of the colonies for the rest of the season as soon as honey comes in freely.

Regarding the time of day for treating diseased bees, I have found early morning, as soon as it is light, the best. The bees are easily handled, and do not crawl into one's clothing as they do in the evening.

Battle Creek, Mich., Dec. 6.

[This seems to carry out Dr. Miller's (or, rather, Alexander's) theory that the source of the trouble may reside in a poor queen.—Ed.]

THE DEVELOPMENT OF POLLEN.

Insects Can Not Stimulate Flowers to Develop More Pollen.

BY JOHN H. LOVELL.

On p. 677, Nov. 1, a correspondent raises the following query:

Now, there is one point in connection with the pollinizing of flowers that I have never seen mentioned. The greenhouse men used to scatter the pollen by hand, and get some fruit; but now they generally keep bees, and get much better results than by hand work. Now, is not this the result of the bee working, or exercising the glands of the flower in some way? . . . Who knows but that this moving or exercising of the stamens and pistils causes the pollen ducts to put forth extra efforts? . . . I should like the opinion of some scientific bee-keeper on this subject, as I think it a profitable one for discussion.

A brief outline of the development of the grains of pollen will show that this is impos-

sible. The pollen is not secreted by ducts, and the number of grains in each anther is determined long before it is visited by insects. The manner in which they are formed is as follows:

At first the anther is a mass of small homogeneous cells, alike in size and kind, covered by an epidermis. Soon it becomes faintly four-lobed in cross-section, and a central strand of tissue is differentiated to form the connective or common base. In the mature anther these four lobes become reduced to two, each containing two cavities partially or wholly united. Each of the four lobes of the nascent anther is a center for the production of pollen. The layer of cells directly under the epidermis (the hypodermal layer) produces the pollen grains. The number of these cells varies greatly in different species of plants, from 1, 2, or 3, to many. This plate of cells, of which there is one to each of the four lobes, is called the arche-sporium. By a series of divisions these cells rapidly increase in number; and the outer and inner layers are differentiated into walls for the protection and nourishment of the primary central layer, which either directly, or usually by three or four divisions, gives rise to the pollen mother-cells.

The mother-cells increase greatly in size, and stain differently from the tissue by which they are surrounded. Their walls thicken, become rounded, and tend to separate from each other. The time required for the development of the pollen mother-cells is from one to two weeks.

Each mother-cell divides into four cells or grains of pollen. In the monocotyledons (grasses, sedges, lilies, and orchids) the mother-cell divides first into two cells, and then each of these hemispheres divides again to form the tetrad of pollen grains. In the dicotyledons (buttercups, roses, clovers, daisies, and deciduous trees) the nucleus of the mother-cell divides at once into four nuclei, and the cell-walls are formed later. Deviations from the number four occasionally occur, and instances are known of 2, 3, 5, 6, 7, and 8 pollen grains arising from a single mother-cell.

The wall of the pollen grain is a delicate structure which soon becomes differentiated into two layers. The outer layer is often beautifully marked in various patterns, and beset with spines and warts. At maturity the pollen-grains become a powdery mass, and the four cavities are reduced to two by the breaking-down of the partition wall in each anther lobe. In rhododendron and some other genera the four grains of the tetrad remain adherent, while in the orchids all of the grains are bound together in packets called pollinia.

The anthers open, or dehisce, in various ways, and the pollen either falls out or is forcibly expelled, or adheres to insects, birds, or other visitors to the flowers.

While only a very brief outline has been given of the development of the pollen grains, it is evident that movements of the stamens and pistils by bees can not increase

the number of grains, since the beginning of each grain of pollen long antedates the first visit of insects to the flower. But while insects can not stimulate flowers to produce more pollen, it may well be inquired whether they can not by selection produce races or species of plants which will yield more pollen than their ancestors. The number of grains of pollen in different flowers varies just as does the number of seeds. By selecting flowers with the largest number of seeds for successive generations the product may be greatly increased. May not the same be done in the case of pollen? Bees, indeed, appear to have done this; for there is a class of flowers called "pollen flowers" which contain no nectar, and which insects, chiefly bees, visit for their pollen alone. Such flowers are the anemone, poppy, St. Johnsworts, roses, mullein, and elder.

In the wild rose there is a ring of many stamens which yield a great abundance of pollen and which bees, especially the less specialized wild ones, visit in great numbers. The rose has proven a veritable thorn in the flesh to both artists and poets. Not long ago the *Youth's Companion*, on its children's page, published a large picture of a rose-bush from which bees were represented as gathering honey. Beneath the bush was a still house from which tubes ran to each flower. After passing through a refining apparatus they were depicted as bottling and carting the honey away. Alas! there is no such thing as rose honey; and, alas for such teaching of natural history!

Again, Bliss Carmen sings of "The Swarthy Bee."

He harries the ports of the hollyhocks,
And levies on poor sweetbrier;
He drinks the whitest wine of phlox,
And the rose is his desire.

Not at all. "He" does nothing of the kind, for the rose is nectarless and the phlox is a butterfly flower. Even art in these days can not dispense with science.

Bees of all kinds (and there are probably at least 3000 species in North America) are dependent upon pollen for brood-rearing. Deprived of pollen this entire group of insects would doubtless disappear. The females, therefore, for a part of the time are compelled to collect pollen diligently, and the pollen flowers seem to have been developed to meet this demand. In the tick-trefoil (*Desmodium* or *Meibomia*) when legitimate visitors alight upon the flowers, which are nectarless, the pollen is forcibly discharged by an elastic mechanism. There are many other pollen flowers, some of which have a part of the anthers more brightly colored than the others, to attract the attention of insects.

In conclusion, then, while insects can not, by irritating the anthers, stimulate an individual flower to the production of a greater quantity of pollen, yet there seems to have arisen, in response to their demand for pollen, a class of flowers producing this food substance only.

Waldoboro, Maine.

ROBBING CURED.

A Change in the Position of Colonies that Resulted in the Complete Mystification of the Robbers.

BY G. A. HUMPERT.

Failures often teach better lessons than partial successes. It was owing to my inability to stop robbing this year that I finally learned something. Doubtless owing to the absolute honey dearth in my locality, and the half-starved condition of many of my colonies right at the time when white clover should be yielding, that robbing became a common event this past year. I vainly tried every means that I had read of except to imprison the robbed colony in the cellar for several days. I didn't try this, for the simple reason that I considered failure almost better than to send my bees to jail when the next few days might bring the expected honey-flow. So I usually had to break up the robbed colony in the end.

But one Sunday morning, when I found that No. 39 was being held up by an overwhelming force, I began to experiment. Reasoning that if exchanging a weak stand with a strong one was a good method of strengthening the weak one, then why not resort to this to stop robbing? No. 38 happened to be a very strong colony, so I promptly exchanged them; then I sat down on No. 38 and watched proceedings, and for five minutes I enjoyed myself hugely. The inhabitants of No. 38, after moving, poured out upon the platform by the thousands, doubtless wondering whether Mr. Williams was there to shake them or what. The robbers filled the air, they came from all directions, doubtless returning for more booty after carrying loads of it home, and, of course, they now all went for No. 38—the colony they supposed had been conquered; but, ah me! their reception was more than warm—it was blazing hot. It did me good to see them yanked about by their antennæ, legs, and wings, and to be forced to give up any little lunch they might be carrying with them.

The lambasting those robbers got was a sight worth seeing. No. 38 poured out more defenders, and the robbers began to entertain doubts of their welcome or the justice of their cause. They no longer dared to alight on the crowded platform, but zig-zagged back and forth with that slow approach and quick retreat so characteristic of the experienced robber. Finally, noting that No. 38 was fully able to care for itself I glanced at 39, and saw that every thing was quiet.

I patted myself on the back, returned to the house, and told Mrs. H. about the great trick I had played upon the robbers; then I went to church (for I hold that a bee-keeper needs all the religion he can get when his subjects take to robbing). However, when I returned I had reason to be thankful that I had had my laugh first, or I should have missed it; for there was poor 39 again being overwhelmed. I became desperate—snatched a screen the size of a lid, raised the hive from the

bottom-board, and slipped the screen between them while the outside robbers were vainly trying to get in, and the robbers inside as vainly trying to get out. I sat down and studied the matter over. Of course, it was plain enough that, when I moved 39, I had moved the robbers along that were then in the hive. They hadn't had time to tell their kith and kin of the new location of booty before I left, hence the seeming quiet at that time.

I looked at 38, all serene; and if a stray robber came within hailing distance of its strong guard he apologized immediately under pretense of a mistake, and went about his other affairs. The exchange of hives had struck me as very good strategy, and I was loath to acknowledge another defeat; but how to deal with the robbers inside of the hive when moving it—that was the problem. Reasoning that every bee—respectable or not—certainly wants to go home at night, I had previously tried moving robbed colonies before after dark, and failed to stop the robbing. Why? Did the robbers simply find the weak and demoralized colony again on the following day? or did some robbers lodge there over night? If the former, then a simple exchange with a strong colony after dark would do the trick if the latter—aha! I had an idea. I waited until dusk, when the bees stopped flying, but before it was too dark for them to find home. Then I went to 39, now quiet save the complaining murmur of imprisoned robbers and the disconsolate roving of a cluster between the screen and bottom-board—some, doubtless, from 39 that had been locked out, but the majority were field-bees from 38, the latter being pure Italians and the former blacks. I took the lid off, and a swarm of robbers instantly took wing. To make sure that all should have a chance to go I got an empty hive-body, stood it in place of 39, shook each comb in front of it, and put it in the new body, closed up, and left them for an hour to quiet down; then I exchanged 39 with 52—another strong colony—and contracted 39's entrance.

The following day I watched with interest, and, behold! it was a complete success. Since then I have employed this method a number of times without a single failure; in fact, I now consider the robbers as my allies. They promptly point out any weak colonies that need strengthening; but now, instead of shaking the combs, I simply take the lid off at dusk, give the hive a jolting, and make the exchange at once. To facilitate matters I have on hand a few wire screens nailed to frames, lid size, which I can easily slip under the hive. These are employed if the robbing is started early in the day; but if in the evening I simply contract the entrance and make the exchange at dusk.

Pittsfield, Ill.

[Your scheme of curing robbing is something similar to one described by A. I. Root in the original edition of the ABC of Bee Culture, with this difference, that he put the robbed colony in the place of the one that was *doing* the robbing. As we understand

your plan you simply put a strong colony, no matter where it is, whether engaged in the robbing or not, in the place of the one that is being robbed because it is weak and unable to put up a stiff defense. We are not sure that we have seen this before described in print, although we would be of the opinion that others had probably tried it. In a general way we think that the plan is good.—ED.]

“WEEPING” HONEY NOT NEW.

BY J. D. FOOSHE.

I note in GLEANINGS an experience by H. F. Hart with what he calls weeping honey. I have had just such an experience with this kind of honey only once in my long time of bee-keeping. About 18 or 20 years ago all the honey in my apiary, both sections and brood-combs and extracting-combs, were filled with it. I tried every way I knew to extract it, and finally gave it up and let it go back on the hives for the bees to use up during a dearth afterward. I wrote to GLEANINGS about it, and I think there were several others who had had the same experience. I do not remember now what suggestion was made by A. I. Root; but you will find somewhere on file my enquiry and his answer. I think that the article is entitled “Honey from Persimmon going to Sugar.”

I was satisfied at the time that the honey was from the persimmon. We had a peculiar condition of the atmosphere that caused it, just as it happens that some years we have honey-dew, and perhaps for several we may not see a trace of it again. This year we have had more than for several years; in fact, I have been troubled with honey-dew but once or twice in all my bee-keeping experience, and only once with honey that acted as Mr. Hart reports. I think the whole trouble comes from atmospheric conditions.

I also think the so-called bee paralysis is caused by atmospheric conditions. Several years ago this disease was raging south as well as north; and I saw it about in neighborhoods, and one or two years I saw two or three colonies in my own apiary during the fall; but for years I have seen no trace of it, either in my own or neighboring apiary.

THE SEVEN-TOP TURNIP AS A HONEY-PLANT.

My good friend A. I. R. has requested me, page 484, Aug. 1, to give my experience and observation with seven-top turnip as a honey-plant. The interview published in the State last spring has called forth replies, so I will, in response to friend Root, tell what I know in regard to this plant. I have for years, perhaps ever since I have been handling bees, at least 30 years or more, planted seven-top turnip for the seed alone which I sell to seedsmen, and find for this purpose it has been a very remunerative crop; but a few exceptions to this rule.

It is the earliest plant we have to bloom, beginning about the middle of March and lasting until the middle of April; and it

blooms more profusely during that time than any thing I know of, and bees have a good time gathering pollen and some honey from it. Honey enough to encourage brood-rearing, bees soon build up on it to the swarming state. I find that our late cold springs in the past few years, with heavy frost about the time turnip and fruit bloom are done, often kill all remaining flowers which bees are dependent on, and they are left in a worse state than had they not been stimulated so early. I find, also, that, while turnip is not a legume, yet it is a fine crop for a cover crop; and corn or cotton grow luxuriantly after it. I harvest my turnip seed about the first week in May, and land is then available for other crops. I have made all the way from 100 lbs. per acre to 400 lbs. I usually sow 15 to 25 acres without fertilizer; but if well fertilized and cultivated I don't know the possibilities of yield. I usually prepare after stubble. I mailed my son some seed last year in St. Paul, Minn.; and he planted them in the spring, and reported they made fine seed. I usually sow here from the middle of August to the middle of October.

Coronaca, S. C., Nov. 7.

BULK COMB HONEY VERSUS SECTION HONEY.

A Locality where there are Several Short Flows is best Suited to the Production of Bulk Honey.

BY J. J. WILDER.

There are many locations where the production of comb honey in sections is very unsatisfactory, either on a small or large scale. Also the production of extracted would be equally unsatisfactory on account of the condition of the market, etc.

The production of section honey is not suitable for the farmer bee-keeper, busy man, or those engaged in bee-keeping in a slipshod way as a rule; and in the majority of cases the production of extracted honey would not suit.

There can be no doubt that there is a lot of dissatisfaction among the smaller bee-keepers over the modern hives they are using. The hives such bee-keepers generally select are those the supers of which are for section honey in some of the many styles.

It would be far more satisfactory for this class of bee-keepers to produce chunk or bulk comb honey in modern hives. It would be more economical, simple, and would give greater returns; and it is hoped that the bee-supply manufacturer will list a bulk-comb-honey super, and advocate it.

In localities where there are from two to eight light and short honey-flows at intervals during the entire season (the writer lives in one of these locations), the production of section honey can never be satisfactory; for as soon as the bees get to storing in the supers the flow is on the decline or off; and

perhaps in two or three weeks there is another such flow, with possibly a "flow" of propolis between each one. At the end of the season there are more partly filled sections than full ones, and may be those that are filled have several different kinds of honey in them, and they will not bring a fancy price.

In the production of bulk comb honey all the surplus honey can be removed at the end of each flow, whether the frames are full or not, and the honey is as nice, for it can be saved and will bring its full market value.

There are many bee-keepers in locations where the most of the honey is dark. If they would produce bulk comb honey, and can it, it would bring more on the market, and be a much better article.

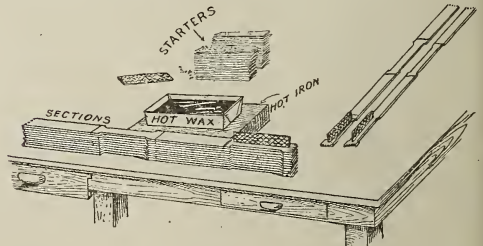
Dealers are "kicking" against shipments of dark honey in sections at any price, and soon the bee-keepers will be compelled to put it on the market in different shape.

It has been our experience that comb honey in bulk will sell wherever section honey will, and there is no reason why it should not. It is more wholesome, can be better exhibited, and it will keep longer. It is not a question whether we shall produce more extracted honey and quit comb honey in these sections less favorable for its production. We should produce more comb honey, for we would soon glut the market for this grade of extracted honey. But how can we best supply the demand for comb honey? I would suggest the old-fashioned chunk honey, which I believe will win out in the long run.

Cordele, Ga.

PUTTING IN STARTERS BEFORE THE SECTIONS ARE FOLDED.

In placing sections in a super, p. 263, May 1, I believe the joints should be placed down. This prevents the bees from daubing them over with glue. They never seem to know when they have enough on; and if the sections were very dry, as I have sometimes seen them, the joints would be so loose they would spring apart before the bees would get around to glue them. The result then is, that the top of the section will be fastened to the super above it.



When placing only one starter in a section after being folded (page 263), did any one ever try putting in starters before folding sections? I can put in starters faster than two men can fold them. This is the way I do it: Pile up the sections evenly in stacks of about ten. Have a dish of melted wax on a hot iron to keep it liquid. Piles of starters should be in easy reach. Take a stack of ten sections. Place them on a table close to the edge of the dish of wax, and pick up a piece of foundation. Dip the edge in the wax and then stick it on the section quickly.

Mason City, Ia., July 19.

W. E. BROWN.



WAHL'S HONEY AND BEE DEMONSTRATION EXHIBIT IN THE ROCHESTER INDUSTRIAL PARADE.

HANDLING BEES ON A FLOAT IN A COMMERCIAL PARADE.

A Form of Advertising that Pays Well.

BY LOUIS F. WAHL.

So much has been said through the bee journals about advertising honey that I have decided to add a word to the discussion. In Rochester, N. Y., there was a parade, October 19, of historical and industrial floats, which in every way was a triumph of art. There were 122 floats, each one representing some phase of Rochester industry. As much as seven hundred dollars was paid by some of the department stores in the decorations of their floats, the main object being to advertise. It was estimated that 100,000 people gathered to view the procession as it went by. I will describe my honey-float, as shown in the engraving, and tell something of its cost.

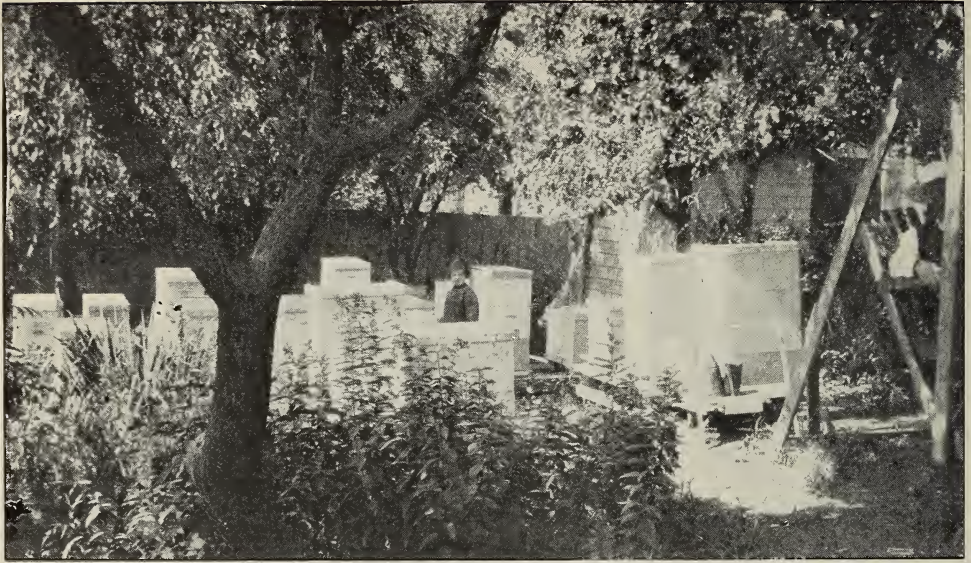
In the first place I paid \$1.50 for second-hand lumber. The painting of the signs cost \$3.78; the oilcloth, \$3.24; the carpet, \$1.50; cheese-cloth, \$2.25, making the total cost of material \$12.27. The best part of it is that all this material can be used again for other purposes. It took my brother three days to do the carpenter work, and Mrs. Wahl did the trimming.

The rack or floor of the float was 12 feet long, 7 feet wide, and just cleared the wheels. At each corner a 2x3-inch post, 9½ feet long, was placed, the lower end extending 2½ feet below the floor. To the bottoms of these posts a strip was bolted, on which

to tack the oilcloth so the wind could not blow it against the wheels. Also on the tops some strips were fastened for holding the signs. The color of the trimmings was that used throughout the whole parade—lavender and white.

During the parade, two boys in front, each sitting on a bee-hive, were eating comb honey, illustrating the fact that "the proof of the pudding is in the eating." My niece, who stands at my left in the illustration, did the uncapping; the young woman in the center changed the combs, while Mrs. Wahl did the extracting.

To hold the attention of the crowd we had a wire-cloth cage (the one which I used a few years ago for demonstrating in a department store). Inside this was a colony of bees, and during the parade I took out the combs, bees and all, held them up so that all could see, and also scooped up the bees with my bare hands. I doubt if half of the crowd noticed the float which followed ours. I could see people looking and poking one another, and exclaiming about the bees. One policeman stepped up close to the cage, then rushed back, brushing himself as though twenty stings had reached him at once. When we reached the courthouse, where the mayor and the officials of the Chamber of Commerce were sitting, reviewing the parade, they all took off their hats and cheered us. Although it was so cold, cloudy, and windy (about 40 degrees Fahr.), that we had to be bundled up to keep warm, the bees did their part well. If sills rest directly on the ground, but the plat-



LEWIS P. TANTON'S APIARY IN PRINCE EDWARD'S ISLAND.

any of them took flight in the cage they struck the screen and fell to the bottom where they clustered together to keep warm.

This method of advertising is just the kind that pays, and, in my opinion, it is worth ten times the cost of any other kind. After a sensation is created, no one talks about the purity of the honey or questions the price. If people like honey at all, it is necessary only to show that you are the "honey-man," and prove it by exhibiting the picture of the float.

I have never yet been afraid to tell others about bees for fear they would go into the business for themselves. The fact is, most people are afraid of the stings; and unless they are so interested that they stay up nights to read and study, they make a failure in the beginning, and quit. Then if, by chance, one happens to master the situation, he will soon find out that overstocking is a bad thing, and he will buy out some beekeeper or seek an unoccupied territory.

Chili, N. Y.

THE EFFECT OF COLOR ON BEES.

The Strongest Colonies Found in Blue Hives.

BY LEWIS P. TANTON.

I was interested in the article on page 543, Sept. 1, covering experiments as to the preference of bees for particular colors. Whether or not they have any particular tastes along this line I will not undertake to determine. That blue hives, under certain conditions, are more profitable than white, I must admit that I entertain very strong and perhaps well-grounded suspicions. Being rather

cramped for room I have had to keep my hives very close to each other. In order to prevent confusion of the bees in recognizing their homes I have all my hives painted alternately white and blue. I find a tendency to be that they work stronger, both in bees and honey, in the blue hives.

In 1908 I chanced upon a fairly good evidence in this direction. June 13th I placed a three-frame nucleus in a white hive, and on the same day a two-frame nucleus in a blue hive, both upon the same stand, not two feet from each other. The white hive gave me about 80 lbs. of surplus honey and one natural swarm, on Aug. 16. My two-frame blue hive produced over 100 lbs. of surplus honey, also one colony, by division July 28, and a natural swarm Aug. 15. But some one will answer, "One of your queens was superior to the other." This is also true; but the poorest queen, as shown by after-performance, was in the blue hive. This year I have had to feed her and all her increase to fit them for their winter rest, with the one exception of the daughter remaining in the old blue parent hive, which is full of her own honey and bees, and in good wintering condition. All her other stock are in white hives. On the other hand, the queen in the three frame white hive and all her progeny have turned out to be prolific layers and princely workers—the best in my garden. From one of her daughters in a blue hive I have this season taken more honey and more brood than from any other two hives in my apiary combined. This queen I lost by accident early in the season; but every one of her issue has given me a fair surplus of honey and an increase, in spite of a very poor honey season.

My apiary has a sheltered and shaded loca-

tion, and I conclude that dark colors attract the heat, from which this advantage comes, and are best adapted to northern latitudes and cool locations. In a hot sun-visited locality the white hive might be best. I choose the blue because it suited my taste. It seems to please the bees also.

As you probably do not hear very often from this quarter of the globe I am enclosing a snap-shot of my apiary of 22 hives. It is not a very large showing, it is true; yet it is the largest, I believe, in this Gem Island of the northern gulf.

Charlottetown, P. E. I., Oct. 23.

[That darker colors usually absorb more light than lighter ones must be admitted; and yet it is a fact that light blue, yellow, etc., reflect the light and heat almost as much as a pure white. The engraving from the photograph of the apiary illustrates this very nicely, for it would be difficult to pick out the hives painted blue, showing that the blue color reflects practically as much light as the white.

Mr. Lovell, in his experiments described in the Sept. 1st issue, as above mentioned, demonstrated that his bees preferred the blue paper. Is it not possible, then, that the bees in this case, preferring the blue color, naturally "drifted" into these hives? If all

the hives were painted blue it is doubtful whether there would be any advantage.—Ed.]

HOUSE-APIARIES.

Something More Concerning their Advantages and Disadvantages.

BY B. M. CARAWAY.

I have had just four years' experience with a house-apiary, and, taking every thing into consideration, I think that the disadvantages more than offset the advantages. My building stands north and south, with the hives facing the east and west, the alley between running through the center. On each side there is room for ten hives.

When I built this shed I thought it would be a good plan to have doors that could be let down during the winter; but I have found that, in this southern climate, this is not a good plan. The temperature may be down to the freezing-point in the morning, and at noon it will be so warm that the bees will be trying to get out. For this reason I keep the doors propped up all the time.

The building proper is 32 feet long, 6 feet wide, and the side walls are 6 feet high. The



MR. B. M. CARAWAY'S HOUSE-APIARY IN TEXAS.

Mr. Caraway believes that, if he were starting anew, he would put his money into better bees and fixtures rather than into a house-apiary.

forms on either side, on which the hives rest, are swung from the joists overhead by means of $\frac{3}{8}$ -inch iron rods 42 inches long. My idea in constructing the hive-shelves in this way was to keep the ants out of the hives. I have found that it would have been better if I had had a circular piece of tin soldered around each rod near the top so as to make a sort of

cup that would hold some material which would prevent the ants from getting down. The bottoms of the hives are just 22 inches above the ground, but five or six inches would have been sufficient.

In mentioning the advantages of such a building I may say, first, that the most vicious bees are much gentler when handled

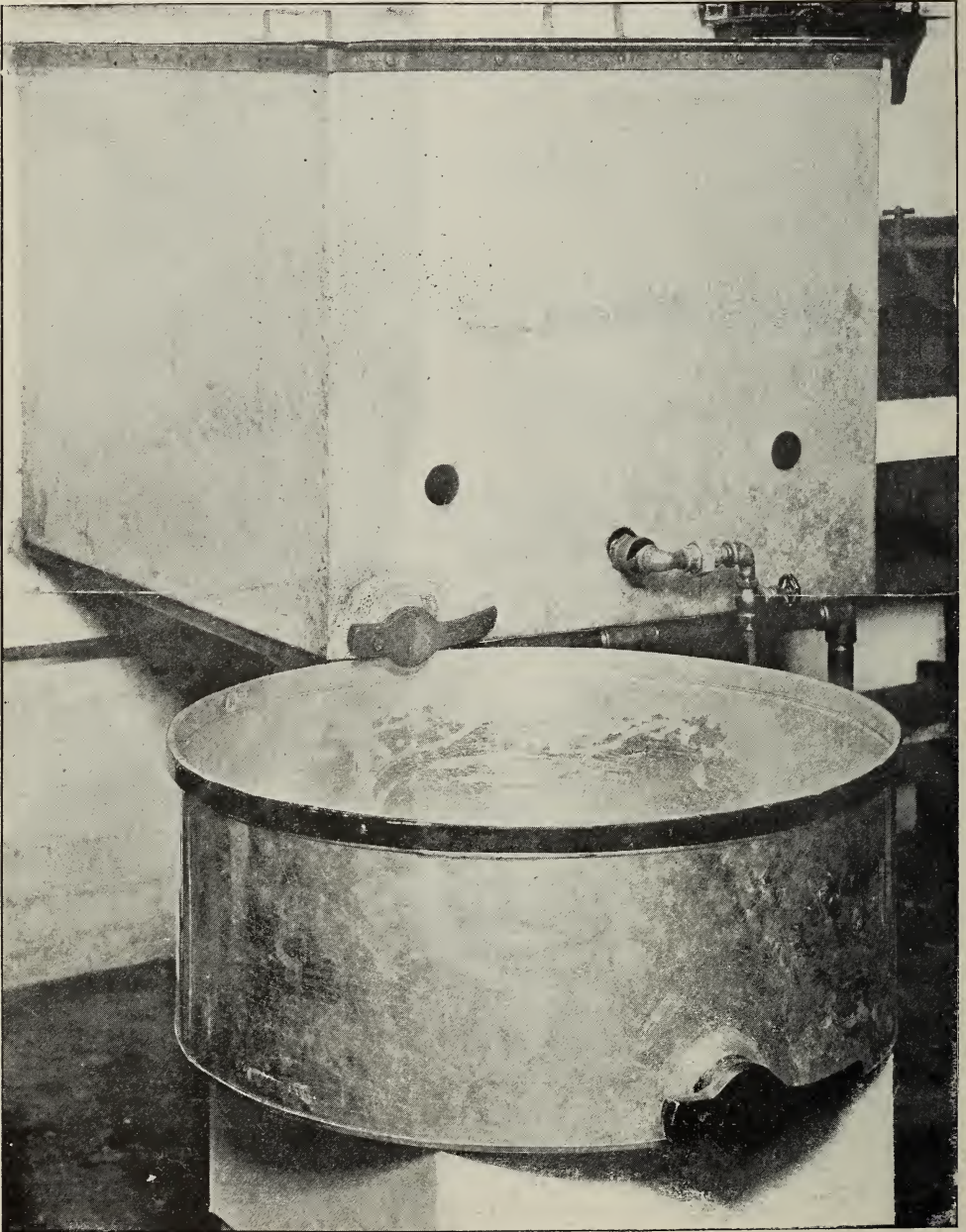


FIG. 1.—POUDER'S HOT-AIR OVEN FOR LIQUEFYING HONEY IN SIXTY-POUND CANS.

The cans are held upside down, as shown in Fig. 2; and the honey, as fast as it becomes liquid, runs down to the bottom of the oven and from thence out the gate, away from the heat.

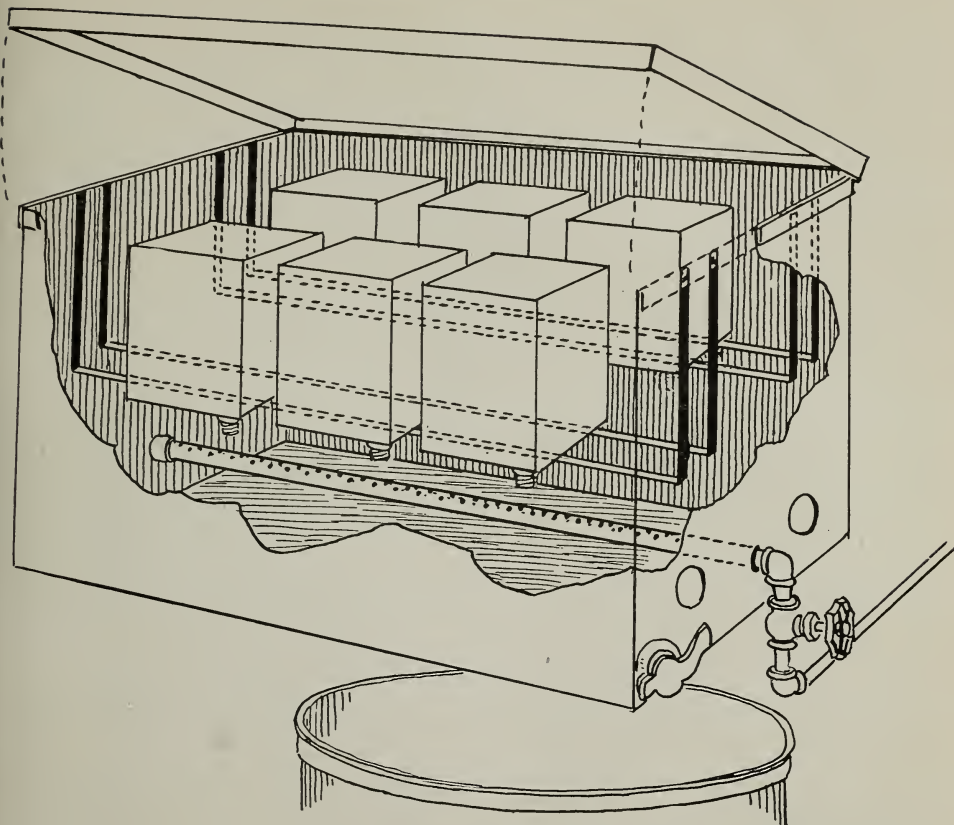


FIG. 2.—POUDER METHOD OF LIQUEFYING GRANULATED HONEY, SHOWING THE POSITION OF CANS AND GAS-BURNER IN THE OVEN.

in a house-apiary. Second, work can be done in any weather, wet or dry. Third, there is no danger of honey melting down caused by the heat. This is a most decided advantage here in Texas. Fourth, the hives need no painting, and will never rot; they are practically everlasting. Fifth, there is no danger of stock knocking over the hives and being stung to death. Sixth, in case thieves are troublesome it is not difficult to prevent them from getting in. Seventh, the bees do not consume quite as much honey in winter as they do on separate stands out of doors, the reason being, probably, that they are less apt to fly out in cool weather, and are, therefore, quieter.

Now for the disadvantages. First, the shade is too dense in the early morning. The bees in the hives outside are working about an hour before those in the building begin. Mr. Alexander never spoke a truer word than when he said that the early morning shade is detrimental to bees. Second, the bees outside gather the most honey. Third, the hives outside can be manipulated the quickest. Fourth, the expense of a building of this kind is no small item. Fifth, many bees get into the wrong hive, and there is apt to be mixing up, which, if honey is not

coming in, results in fighting. Young virgins, also, may get into the wrong entrances and kill the old queens. I have painted the fronts of the hives different colors, but this does not seem to remedy the trouble. The building is not sheltered from the winds, and sometimes when there is a stiff breeze from the south the bees are blown on toward the north end of the building, and thus get into the wrong hives. I intend to move the apiary to the woods in a more quiet location.

Summing it all up, it is my belief that, if a man has money to build a house-apiary, he had better put it into more hives or better queens or bees, or something else that is needed. I think that the beginner especially can spend his money in better ways than by putting up a building of this kind.

Decatur, Texas.

LIQUEFYING GRANULATED HONEY.

BY WALTER S. POUDER.

For years I have depended upon the hot-water tank for melting five-gallon cans of granulated honey, but have found many inconveniences connected with the method, and have been obliged to adopt a safer and

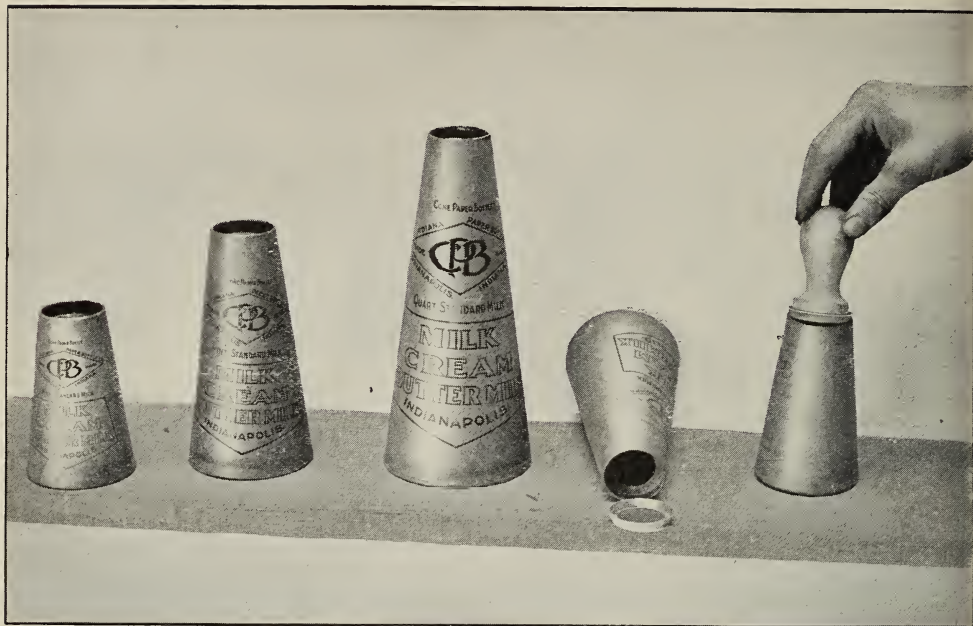


FIG. 3.—SAMPLES OF PAPER MILK-BOTTLES SUGGESTED BY WALTER S. POWDER, FOR RETAILING LIQUID HONEY.

The stopper is crowded tightly into the small end with the wooden plunger. When clear in, it is impossible to remove the cap without the use of a knife or screwdriver. The cap is put on the small end to reduce the liability of leakage.

speedier method. To take care of the expansion I have used syphons, coal-oil pumps, funnels soldered to perforated screw caps, and other methods, but have always found a lack of tidiness; and in some instances we have ruined very superior honey by overheating. If we overlooked a nail hole near the bottom of a can we would find a can of sweetened water instead of honey; and in lifting heated cans from the water I have had the handles pull off; and the can, in falling back, would cause the hot water to slop over and scald my toes till I have seriously wished that I did not have to dabble in honey at all.

I have longed for a method in which the liquid honey would flow away from the heat as fast as it became fluid, and at last I have such a device in use, and I believe many readers of GLEANINGS will be interested. It is simply a gas oven, made of heavy galvanized sheet iron, and of a capacity for six cans, three on each side of the gas-burner, cans to be suspended on brackets in an inverted position with caps removed. When in use the honey-gate at the bottom of the oven is left open; and as fast as the honey becomes liquid it flows to the outside tank. Considerable experimenting was required in order to maintain proper temperatures, and we have learned to regulate the temperature by using a thermometer before we place any honey in the oven. Naturally the highest temperature is nearest the top of the oven, and we are able to keep within 180

and 190, and the temperature declines toward the bottom of the oven, hot air being circulated throughout. Some heat is slightly radiated against the lower part of the cans, and I find this in my favor, as it tends to prevent openings of cans being clogged with granulated honey.

The two round openings in the front are for ventilation, and to secure perfect combustion. There is a three-inch space between the burner and the bottom of the oven. Cans are suspended with a thirteen-inch space between the bottoms of the cans and the bottom of the oven, and a two-inch space over the tops of the cans; and there is also a twelve-inch space between the two rows of cans. We also find the device very convenient in melting jars of granulated honey without so much as injuring the label by simply inverting the open jars on a heavy wire screen.

Such an oven could be constructed for any capacity—for two, four, or six cans at one time, and could be used over a gasoline-stove where gas is not obtainable. A thermostat could be added, thus making it an automatic arrangement; but in my business I have not found it necessary. The honey, as it flows into the outside tank, is just right to be strained into our bottling-tank, and there is no deterioration, because it could not be overheated.

Visiting bee-keepers pronounce the entire arrangement a model of perfection, and I submit the above description by request.

PAPER MILK-BOTTLES FOR EXTRACTED HONEY.

Since Mr. J. E. Crane introduced the paper milk-bottle for extracted honey I have felt much interest in the affair; and a manufacturer of this ware has supplied me with a liberal lot of samples which I have been testing. In my opinion this bottle will fill a long-felt want where honey is offered at retail, and at such places as market-stands, for a great many people would like to take home with them a pound or so of honey if a neat container could be furnished without cost. I have used paper oyster-pails for this same purpose; but removing the honey from an oyster-pail is always untidy at the best, while the waxed bottle is very neat and attractive, and easily drained into a dish.

I believe there are several patterns of these bottles now being offered, of different sizes and shapes. The ones that I have been using have a neat paper stopper, Fig. 3, which could be sealed with hot paraffine if so desired. I also find the package very desirable for granulated honey in a damp climate such as we have here, and jars could be filled while honey is semi-granulated, and then allowed to granulate completely; and in preparing for the table the waxed paper could be easily removed. If made in quantities, suitable reading-matter could be arranged, leaving a blank space in which the producer could stamp his name.

While I have not tested these jars as to shipping qualities, I feel sure that they would stand all requirements. I will explain that I have none of these jars for sale, but I believe they should be classed along with our honey-packages; and when understood they will be in demand, and they will fill a long-felt want.

Indianapolis, Oct. 14.

ARTICULAR RHEUMATISM RELIEVED BY BEE-STINGS.

BY W. A. PRYAL.

To have rheumatism and suffer its slings and pains, or take up a few live honey-bees and banish the tormentor with some well-directed stings, is a question that even the learned men of the medical profession can not agree upon. So when doctors disagree, we are sure to be badly at sea, to put an old saw in a slightly changed form.

The efficacy of bees' stings as a cure for rheumatism is again being discussed in this country and in Europe. In the September number of the *American Bee Journal* Dr. A. F. Bonney gives a lengthy argument on the negative side of the question. Dr. C. C. Miller, the noted apiarist and writer, takes up the same question in the October issue of the magazine named. The latter does not entirely agree with the first writer. He refers to the favorable position of the European medical fraternity in regard to the benefit of bee-stings in the cure of rheumatism; also to the fact that the preponderance of

evidence in this country is on the affirmative side. Thus the doctors stand. Who is to decide?

We of the laity bee-keepers have generally believed that the bee would drive rheumatism from our afflicted bodies; and still some apiarists have been as full of "old rheumatiz" as those who were never pricked by a bee. However, I am able to report the case of one who has shown bravery, inasmuch as the patient suffered the stings of thousands of bees in order to regain her usual health. This case has come under my observation during the past summer.

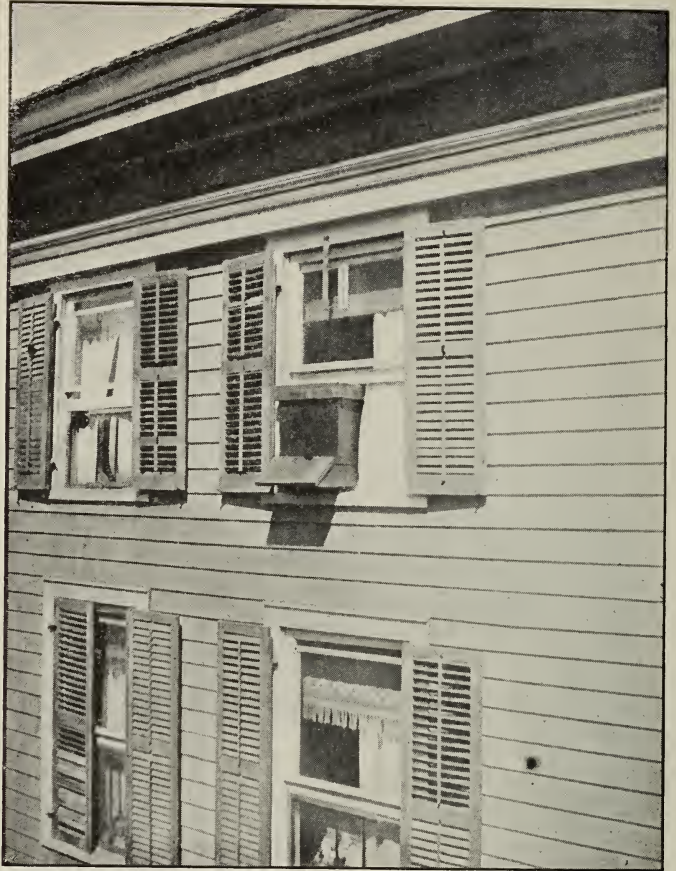
Mrs. Mary Ruttenbeck, something less than a year ago, became a sufferer from a very severe attack of articular rheumatism, the main point of attack being in her knees. The malady became so violent that she was not able to walk. The pain at times was excruciating. Her brother, Mr. Piercey, is employed at the Mare Island Navy Yard, this State, and is an ardent tender of a small apiary which he keeps on the island. Having read that bee-stings are a cure for the disease in question he sent for his sister and had her submit to the "honey-bee-sting" cure. The invalid was tenderly brought out to the apiary one fine spring day and seated in front of a bee-hive. A bee was deftly caught and made to jab its sting into the lady's knee. The insect performed its part of the operation in good style. Mrs. R. protested at being made a target for further stings. She thought the pain from one sting was sufficient for her for a lifetime—that it was enough to drive the disease from her.



MRS. MARY RUTTENBECK,
who endured the pain of a large number of bee-stings to get relief from articular rheumatism.

But Mr. Piercey thought otherwise. He was not planning to practice homeopathic bee-sting medicine—it was to be allopathic or nothing at all. So the stinging went merrily on, the patient all the while almost fainting with the added pain. Mr. Piercey was fast working his bees to death in this new-fangled occupation he had found for them, for he did not desist until thirty-nine stings were duly planted in his sister's knees. Then she was carried away; but in leaving the apiary a bee of its own free will gave the patient a terrible jab in the neck—perhaps for good luck, or, may be, just to say that Mrs. Ruttenbeck "got it in the neck." Any way, between getting it in the knee and in the neck she was a very sick woman for a few days. It looked for a time as if the cure were going to be worse than the disease.

The turning-point came; and after a few more applications of a less number of stings she was able to walk. She found that it was not necessary to take drastic doses of thirty-nine stings at a time. In June last she came to Oakland. It was about this time that I became acquainted with her, for a friend of hers came to me to procure good strong healthy bees that could be vouched for to sting good and plentifully when occasion demanded. I found a colony of Spanish-blacks that had a small percentage of Italian blood. I gathered some three dozen of them into a cage and told the gentleman to instruct the patient that the bees should be "well shaken before being taken." The instructions must have been followed, for in a few weeks the lady was able to walk from the electric-car line to my place, something like a third of a mile distant. Since then she has been here a number of times—sometimes to get bees and other times to purchase fruit, for which our place is somewhat famous. On one of these occasions, about noon, which is not the best time to take outdoor pictures, I had her pose for a photograph that the readers of GLEANINGS might see the picture of a California woman who attributes her almost entire cure from rheumatism to the use of bee-stings. Yes, I wanted the GLEANINGS folks, too, to see a woman who had nerve to face a thousand bee-stings, and prove her faith in



A HIVE KEPT IN A WINDOW OF A HOUSE IN A VILLAGE.
An alley runs directly beneath this window; and, though horses frequently pass, none are stung.

the cure about which the medical profession are in doubt.

Oakland, Cal.

[An article on this subject was published in Dec. 15th issue, page 784, from Dr. Bonney.—Ed.]

A COLONY KEPT IN A SECOND-STORY WINDOW IN TOWN.

BY C. H. WATSON.

I am a lover of bees; but, unfortunately, I live in the heart of a village. I am sending herewith a photograph showing my colony of fine Italians which I have in the second-floor window on the south side of my home. These bees have been very law-abiding indeed, not even bothering horses that pass in an alley beneath the window. During the past season this spot has been the very personification of industry. These little friends have visited distant hillsides; and as they have returned laden with sweets of a thou-

sand flowers they have taught me lessons of patience and faithfulness.

Westfield, Pa., Sept. 10.

POISONOUS COMB HONEY.

BY GEO. M. LORD.

Mr. Root:—Will you kindly tell me what there can be in honey to make it poisonous? Some days ago I took a swarm of bees from the eaves of a neighbor's house. There was about 75 lbs. of apparently fine white-clover honey, most of it in new comb, which had never been used for brood. All of the honey was stored this year, as the swarm came from my yard in May. At least four times I have attempted to eat some of it; but each time within twenty minutes I have been taken with severe cramps and nausea. Others to whom I have given the honey have experienced a like result.

I find after the honey has been extracted by melting on the stove it loses its poisonous quality. Whether due to the heat used or to the absence of the comb I can not say.

Although the party from whose roof I got the honey sold and gave away about fifty pounds to at least a dozen different people, yet there were only two besides myself who suffered any ill effects.

Wells, Me., Nov. 2.

[We asked our correspondent to send us a sample of this suspicious honey; but after eating quite a little of it we experienced no very bad result with the exception of a slight "gnawing" sensation. Others who tasted the honey could detect nothing wrong. We finally sent the sample to our chemist, W. A. Selser, knowing that he could probably find the trouble, if any. His interesting reply follows.—Ed.]

Mr. Geo. M. Lord:—I have put the sample through my laboratory, and just completed the analysis. I find this is absolutely pure, and there is absolutely no poison whatever in the liquid honey. There is a good amount of sucrose, but not above the normal quantity allowed. So I should report it a pure sample in every way.

While there was not sufficient wax to give as complete an analysis as I should like, after separating, washing, and cleaning it from the honey and residue I saw what I would call traces of vegetable poisoning, but in very small amounts—not large enough to determine the quantity.

I had a sample which I think was analogous to this about fifteen years ago, and probably a few remarks about it may be helpful to you. A case of violent cramp and poisoning, where several parties were stricken down and kept in bed from one to three days, was reported to me in Trenton, N. J.—said to be the result of eating comb honey. I immediately went to Trenton, and, after following up several clues, found the honey was from near Hammonton, N. J. I also found upon investigation that the trouble

was caused by the wax, not the honey itself. After driving for miles through the country surrounding Hammonton, on inquiring of the different bee-keepers I found this honey had come from one source. It was gathered in the lowlands at a time when the bees were working on a plant somewhat similar to our mountain laurel. Honey gathered from the same location, although possibly not exactly from the same source or under the same conditions, has been sold and consumed since without giving any trouble.

THE A. I. ROOT CO.,

Wm. A. Selser, Man'r.

Philadelphia, Nov. 29.

COTTON AS A HONEY-PLANT.

A Fall Crop Produces More Honey than That Grown at the Regular Time.

BY D. P. HUNT.

Noticing the enquiry of D. D. Stover and your reply thereto, Nov. 1, page 676, I will say that to-day, Nov. 11, the bees are getting honey from cotton as fast as I have ever seen them gather it from any source. It is water-white and of fine flavor. About ten days ago I discovered my bees were busy, and going south from town. On investigating I found they were going to some cotton-fields about $1\frac{1}{4}$ miles distant, where there had been some pretty good showers during the latter part of August and first of September; sufficient to cause a rank second growth, and it was covered with bloom. I came back and moved one load down there, and set them out right in the field, and will carry another load to-night.

I have kept bees some 20 years; but being a druggist I have had very little time to devote to any thing else; but having lost my store by fire last year I purchased some more bees and have become quite a bee crank. Last season, 1908, was the best I have ever seen; this season was the worst. Up to Aug. 20 we had hardly rain sufficient to lay the dust. All crops and even the weeds failed to grow; but cotton will stand until frost; and if it gets rain in the fall it will grow fast. I believe the fall bloom will yield more nectar than it does at its usual blooming time which is from May to July, as the long hot days seem to dry up the secretions, and, as a general thing, there is an abundance of other bloom during those months in this locality, and it would be difficult to say that you had any real cotton honey.

But there is no mistake about it in the fall, for there is absolutely nothing else to work on. I have watched the bees at work on it for hours. During the last few days they do not seem to care much about the inside of the bloom, but prefer the nectar-glands at the base of the corolla, and outside, also, on the buds or "squares."

There has been a great dearth of pollen all the season, and the bees are in great need of it. They are searching far and near for

it; but if they got any from the cotton bloom it has escaped me.

In conclusion I am sure that in any year or any locality where cotton has sufficient moisture to induce vigorous growth its bloom will yield nectar; and in the fall months, with cool nights, it will yield abundantly.

Blum, Tex.

[From various reports that have been sent in we have been led to believe that honey from cotton is of indifferent flavor. We should be glad to get reports from others.—Ed.]

THE BEST PLACE FOR BAIT SECTIONS.

A Valuable Article.

BY H. E. CROWTHER.

As to the best place in a comb-honey super (corners or center) for bait sections I am inclined, after using them both ways, to do as Mr. Bevins does. He says, "Last year I put the baits in the corners; but the results were not satisfactory. Some were untouched when the rest of the super was finished, and many were left uncapped. Bees naturally begin work in the center of the supers, and that, I believe, is the best place for baits."

I think the object of bait sections is not to get the super filled out at the corners but to get work *started* in the super, and the *corners* will take care of themselves. Later, if the honey-flow amounts to any thing, and if it is poor, possibly the four-cornered super would be left empty instead of half full like the one with a good start in the center.

SHORT SPLINTS PREVENT BUCKLING.

I have had no trouble with buckling in using five-inch splints, as has Dr. Miller. I used them on both medium-brood and light-brood foundation. The frames were wired with three horizontal wires, two of which helped support the splints, and were all that are necessary, I think. I intend using, the coming season, two wires and five short splints. Combs nearly always break within two inches of the top-bar, and with four or five splints reaching well below this weak place and supported by the wires very few combs will ever break; and splints of this length are much easier to apply. I have yet to find any poor combs built over this arrangement. Of course, another season may be different; but I will try it anyhow.

Unsplinted combs that break near the top-bar will be quite well fixed up if they can be put in a strong colony upside down for a while and properly spaced; otherwise it is a waste of time to put them back at all.

EXCLUDERS DO NOT INTERFERE WITH THE STORING OF HONEY.

I would not do without excluders on extracted-honey colonies, and have not found them to be honey-excluders. If a queen goes above (that is, I mean when excluders are not used) she gradually deserts the lower hive; and the addition of another body of

empty combs on top only invites her higher up. When we come to extract, the colony is in any thing but an ideal condition, with brood scattered through the whole hive; and if the extra bodies of combs have been spaced wide they are not in the best shape for a brood-nest, even if brood were wanted here. Many of the extracting-combs we use are not suitable for brood anyhow—mainly because of drone-cells or a great plenty of sagged cells in the upper part (unsplinted combs).

The presence of drone comb in the super is not the whole cause of queens going up, for they work up just the same with all worker comb above.

DOES THE DISTANCE BEES FLY HAVE A BEARING ON THE AMOUNT OF HONEY GATHERED?

A friend of mine has a homestead three-fourths of a mile above the irrigation canal, and has 150 colonies of bees on his place.

This year his crop was about one-third as good as the average from well-cared-for bees kept below the canal among the alfalfa-fields. Has this short distance made that difference in the crop? There is nothing above the canal for the bees except a few early flowers for breeding up in the spring. His crop the year before was somewhat better. The bees, of course, get less than half a range, but I know of bees located directly on the canal with only half a range that do as well as full-range yards in the same neighborhood. Does the bare half-mile make the difference?

Will three yards of bees produce less honey if located too close together in a straight line than the same bees would if all were in the two end yards, by reason of the bees in the middle yard being handicapped by coming to the dry streak on each side, and not passing over, so losing all benefit of the range further out?

Another neighbor had a queen-mating yard seven miles back in the hills, and he says that even his nuclei carried plenty of alfalfa honey from the valley seven miles away.

Parma, Idaho.

[In answer to your question whether the bare half-mile from the forage would explain why those 150 colonies did not do better, it would seem hardly probable. If there were other yards, the bees of which were located nearer the same range, then it would be easy to see why bees further or half a mile away should not do as well. This is an interesting subject for discussion, and we hope that some of our readers in the alfalfa regions will give us data.]

We should also like to get further reports on the question whether queen-excluders are also honey-excluders. The mass of evidence so far received would seem to indicate very strongly that there is no appreciable loss, and that, on the other hand, it does not pay any bee-keeper, when running for extracted honey, to let the queen have full range of the hive, supers and all.

Thus far the short splints—that is, those that do not reach to the bottom of the foundation—have given a good account of themselves. While W. Z. Hutchinson says there will be no sag if *medium brood* foundation is secured by four horizontal wires drawn taut, the facts remain that a light brood is considerably cheaper than the medium-brood sheet. Under some conditions the lightweight will buckle when the wires are drawn taut. If short splints and *light brood* foundation can be made to work satisfactorily they would effect an economy all around. We hope to get further reports on the use of splints, long or short.—Ed.]

A STUDY OF NATURAL HONEY-COMB.

BY DR. C. C. MILLER.

Comb foundation is in such general use nowadays that it would be nothing strange to find bee-keepers who have never seen a frame of entirely natural comb. I have been making a study of some specimens—a dozen in number—that were built entirely at the sweet will of the bees, not even the least starter being in the case. They range in size from a piece of a few square inches to nearly a frameful.

POSITION OF CELLS.

Looking at brood foundation that I have, I find the cells placed with the angle at top and bottom.

In super foundation the angle is at each side, one of the cell-walls lying horizontally at the top and another at the bottom. I don't know why the two kinds differ.

The bees seem to copy after the first plan. Not very strictly, however. In only one case can the row of cells be said to be really in a horizontal row. In another specimen the row descends half an inch in about a foot. In the other cases the variation from the strict horizontal is still greater.

The cells run in a fairly straight row except in one frame where the line is somewhat wavy, apparently because there were four initial points of beginning, and the four parts were afterward joined together.

SIZE OF CELLS.

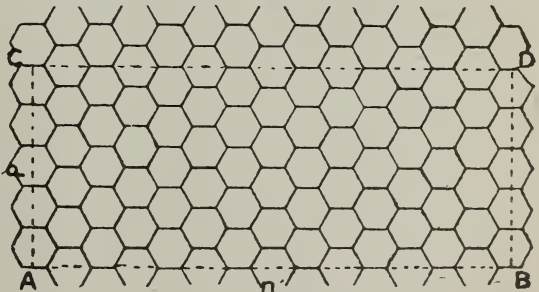
It is a common thing to say, "Worker-cells measure 5 to the inch, and there are, consequently, 25 cells on one side to the square inch." Neither of these statements is always true if we speak with any degree of accuracy. There are not always exactly 5 cells to the inch; and if there were, there would be, not 25, but $25\frac{1}{3}$ cells to the square inch. See Cheshire, Vol. I., page 176—that is, if the cells were exact hexagons. The trouble is that they vary from this quite a little. On one piece of comb, measured horizontally, the average diameter of a cell was .201087 of an inch; in one of the diagonal directions it was .19853, and in the other .20357, the total average diameter being .201062 of an inch.

Upon reading those figures some one may think that I must have had some very nice instruments with which to take measurements. I had nothing but a common pocket-rule, and after I tell you how I did it you will see that a schoolboy could easily do the same.

Suppose I want to measure the diameter of a cell. Laying the rule upon it, and measuring merely that one cell, I could only say it was somewhere between $\frac{3}{8}$ and $\frac{1}{4}$ of an inch—not very exact. But if I measure 10 cells, and then divide by 10, I can come about ten times as near the exact measurement. The larger the number of cells I take in my measurement, the nearer I can come to exactness. Well, here's the way I do. I lay the rule upon the comb, with one end of the rule exactly corresponding with one of the cell-walls. Then I look along the rule till I see some notch which corresponds with some cell-wall. Then I count the number of cells in the given distance, divide the number of inches by the number of cells, and that gives the diameter of a cell. For instance, I find a notch of the rule at a cell-wall $9\frac{1}{4}$ inches from the end of the rule. I count the cells, and find there are 46. I divide $9\frac{1}{4}$ by 46, and I have .201087 of an inch as the diameter of one cell. Easy, isn't it?

But after I have the diameter of a cell it's just a little bit of bother to figure the area of the hexagon, especially as its three diameters are not all alike. A beautifully simple way of measuring the surface of a comb is given by A. Berchon, *L'Apiculteur*, p. 228.

Take the parallelogram ABCD. The line AC passes through the middle of 5 cells. Next to this vertical row of cells is another row of 4 cells, with a half-cell at top and a half-cell at bottom, making 5 cells in the row. So there are 5 cells in each vertical row in the parallelogram. The line AB passes alternately through the middle of a cell, co-



incides with a cell-wall, then through the middle of another cell, and so on. Each end of the line stops in the middle of a cell-wall; and if you put together the two half-cells at each end, the line measures 14 cells. There being thus 5 cells in each vertical row, and 14 in each horizontal row, there must be $5 \times 14 = 70$ cells in the parallelogram.

Instead of measuring from the center of one cell-wall to the center of another cell-wall I find it more exact to let the line AB begin at an angle of a cell and end at the corresponding angle in another cell.

It may be worth while to notice that the figure, copied from *L'Apiculteur*, has the cells running the wrong way, a side of a cell being at top and bottom of each cell, whereas it should be an angle.

In one piece of comb, measured horizontally, there were 42 cells in $8\frac{1}{2}$ inches, and measured vertically there were 38 cells in $6\frac{1}{8}$ inches. Multiply 42 by 38, and $8\frac{1}{2}$ by $6\frac{1}{8}$, then divide the former product by the latter, and you have 28.076 cells to the square inch in that piece of comb. In another comb there were 26.54 cells to the square inch—quite a difference in the two combs. T. W. Cowan (*The Honey-bee*, 181), took 36 measurements, and found the diameter of a cell to range from .186 of an inch to .211. That's a much greater variation than in the two combs I have mentioned; but then, he made more measurements.

In a sheet of brood foundation I find 26.62 cells to the square inch. That's about the same as my sample with the larger cells; but it has smaller cells than some that Mr. Cowan found in natural comb. That shows it would be feasible to have foundation with larger cells, thus working toward a larger bee, if a larger bee would get more honey. Of that I have some doubt.

Marengo, Ill.

THE PRACTICAL TREATMENT OF AMERICAN AND EUROPEAN FOUL BROOD.

Some Things we Know and do Not Know about these Diseases.

BY DR. E. F. PHILLIPS.

Read at the National Bee-keepers' Association Convention, Sioux City, Iowa, Sept. 22, 23, 1909.

The subject which has been assigned to me at this time is one of the most important now before American bee-keepers; and, unfortunately, it is not very well understood by any one. Toward the end of devising proper treatment, all investigations of the cause and characteristics of bee diseases must bend if they are to be of any value to the practical bee-keeper. However much the bee-keeper may be interested in the bacteriological findings in a bee disease, these things are of less importance in his practical work; but he wants and needs careful, reliable work on treatment.

The bacteriological investigations are very important, but I shall not dwell on this point. It is, perhaps, enough to say that, until we know the cause of a disease, and can make a detailed study of that cause, we can not know just what we are fighting.

In finding methods of treatment, there are two possible ways to proceed. By repeated trials of various manipulations the practical bee-keeper may, by chance, hit on something which enables him to save his property from destruction. He may make such a lucky find without any knowledge as to what has caused the disease. It was in this way that Schirach, in the eighteenth century, found

the shaking treatment for foul brood, and since then this same treatment has been used extensively. The Schirach treatment, or, as we now call it, the shaking treatment, enables us to prevent the brood diseases from destroying our bees, and it certainly is satisfactory in the majority of cases.

The other way of investigating treatments is to find the cause of the disorder, study its characteristics, and plan manipulation in the light of knowledge gained in that way. This method of procedure, while probably the more logical way, is open to the minority; but all can take the results obtained and utilize them without any great knowledge of bacteriological technique. But such work is slow. I fear that many bee-keepers wonder why the Bureau of Entomology is not able in a short time to make positive statements concerning the causes of disease, particularly European foul brood. To tell why would be a somewhat lengthy task; but let me simply point out that, in all diseases of animals so far studied, accurate results have been obtained only by years of work, and no problem in bacteriology is an easy one. It took years to establish the cause of American foul brood, and there is still much to learn. The bee-keeping public has been victimized by too many hasty workers who jump at results on insufficient data, and we do not care to be in that class.

To illustrate the great desirability of first getting the cause, let me cite some recommended manipulations. Because carbolic acid is used quite generally as a disinfectant, it has been repeatedly recommended that a 2 per cent to 5 per cent carbolic-acid solution be used to disinfect hives in which infected colonies had lived. This was done without a knowledge of the cause of either disease; and in the case of American foul brood of which we now know the cause it is certain that a 5 per cent carbolic-acid solution will not destroy the spores of *Bacillus larvæ* in the short time taken to wash out a hive. In the case of European foul brood, of which we do not yet know the cause, we are unable to say whether the carbolic acid acts as a disinfectant or not.

In a similar manner, without knowing the cause of either disease, various authors have recommended the feeding of carbolic acid, naphthole beta, salicylic acid, and similar drugs in sugar syrup to diseased colonies. While, as suggested previously, it is possible to stumble on a method of treatment by promiscuous experimentation, we should not take these recommendations too seriously until more is known about the disease. Such recommendations are largely confined to European authors; for American bee-keepers, from sad experience, have learned to put little faith in these treatments.

It has also been recommended that various antiseptics be placed in the hive to ward off disease. One European writer, posing as the omniscient guide of the bee-keeping world, writes in a recent edition of one of his books as follows:

There are certain antiseptics such as carbolic acid,

phenyle (or creolin), izal, eucalyptus, camphor, naphthaline, etc., which evaporate at the ordinary temperature of the hive, and whose vapors, while not actually killing the bacilli, arrest their increase or growth.

When it is remembered that this is apparently recommended without any knowledge as to the cause of any brood disease, it will not be taken seriously. Surely no American bee-keeper would entertain any hope from such a treatment.

It is wise at times to cast up accounts to see where we stand. Let us look over the field of bee-disease treatment to see what we know and do not know.

We know from the experience of hundreds of bee-keepers for years past that the shaking treatment will enable the bee-keeper to keep either disease under control so that he can remain in the business and make money out of it, if the seasons permit. This treatment consists of removing all combs, honey, pollen, and brood from the colony and putting the bees on foundation, compelling them to replace their comb, rear new brood, and gather new stores. By this means the diseased material is removed, and the contaminated honey and pollen which we consider as the carrying agents are no longer available to feed to the brood. We do not know what becomes of bacteria which may be carried over in the honey in their honey-stomachs, or possibly even on the outside of their bodies. We do not know when it is safe to use full sheets of foundation and when we should use only starters. There are many other points variously surmised which are not yet settled, and we must content ourselves with the fact that, if a diseased colony is shaken from its combs to a clean hive on starters of foundation, the disease rarely reappears. Starters of foundation are here specified, largely because reports would indicate a larger percentage of successes when they are used. If all worker comb is desired, the bees may be given full sheets of foundation later.

We do not yet know just when or how it is best to shake in order to meet with the least financial loss, and this is one point which must be thoroughly investigated. Ten frames of Langstroth size will probably contain, on an average, four pounds of wax; and to shake the bees so that they will secrete this wax with the least consumption of time and stores is a problem of great importance. Probably a more important point is to devise a way by which the bee-keeper can get out of the combs all the wax in them. Our present methods of wax extraction are exceedingly crude, and we are annually losing a great deal of wax by the use of the wax-presses now commonly employed.

We do not know whether it is always necessary to disinfect the hive or not; but to be on the safe side we should continue to do it until we know that it is not necessary. Since chemical disinfectants do not promise any results for American foul brood, and since we do not know the cause of European foul brood, we can be sure of complete disinfection by burning out the hives. If this is

done carefully it does not injure the hive. In the field work of the Bureau of Entomology a blue-flame torch such as is used in removing paints has been found very satisfactory.

We do not know of any antiseptic which can be fed in syrup or given in any other manner which will cure the disease. Neither do we know of any method by which combs can be disinfected by fumigation or otherwise to insure success. Until careful bacteriological work has demonstrated the value of any such method it would be folly to put any reliance in it. Furthermore the experience of most American bee-keepers up to the present has shown that antiseptic feedings and fumigations which have been tried are not of the value attributed to them. It would, therefore, be unwise to recommend them.

The logical practical treatment for both of the diseases under discussion would, therefore, appear to be the shaking method. Until something better is devised, this is the only treatment which we can recommend. When our knowledge of the causes of the two diseases is more complete, it is to be hoped that we can find something better. It is also to be hoped that the present weak points in the shaking treatment may be strengthened by work which will give us information whereby we can decrease the expense of shaking. The main conclusion which we can draw from a study of treatment is that there is still much to learn.

So far I have discussed the subject of control from the standpoint of the individual bee-keeper. We have learned, however, that individual action is not enough, and that co-operation and outside aid are the essential points in a rational control of foul brood. Although this portion of the subject of disease work is not specifically assigned to me, I shall ask your indulgence for a few moments longer on some phases of this problem which occur to me as a result of some recent experiments of the Bureau of Entomology.

The work of the various States in providing inspection of apiaries is of great value to the bee-keeping industry, and an earnest effort should be made to have proper laws passed where they are needed. In several States such movements are now on foot. When such laws are passed, however, we can not afford to believe that the problem is settled. It has only begun, and the State inspector can not be expected to do all that remains to be done.

The element of the work in controlling disease which will require the most labor is the educational feature. It is really remarkable, after all that has been written, how many bee-keepers do not know that there are any diseases of the bee.

The first step in this work is to learn just where the diseases exist. This phase of disease work has been neglected in this country, and no concerted effort has been made to establish the necessary facts. During the summer just closing, the Bureau of Entomology made a greater effort to locate diseases; and in all, we have examined nearly

a thousand samples to get the data desired. We are not yet prepared to give our results. In doing this work we are compelled to make it a rule never to be sure whether disease exists in a given locality until a sample of diseased brood has been obtained. Furthermore, all samples were examined bacteriologically to be sure of no error in diagnosis. In the case of European foul brood this is particularly necessary, for the symptoms are not constant enough to be sure of a sample after it has been away from the hive for a time. Many reports of disease turn out to be unreliable, and this matter is too important for any suspicions to be accepted as facts. While the sending-in of these samples of various persons interested is much appreciated, it has seemed rather strange that some men who were in a position to help us materially with this enormous task have not responded as we might have wished. There may be some bee-keepers who do not want it known that they have disease in their apiaries, and, therefore, are opposed to work on distribution. It is no disgrace to have disease break out in an apiary. The only condition under which a bee-keeper may be considered remiss is when he does not treat his diseased colonies. Any man who hides disease and tries to give the impression that his bees are healthy when they are not is, to say the least, no friend to other bee-keepers. In some States he is legally worse than that.

After the distribution is learned, the next step is to get in touch with every bee-keeper in the territory where diseases exist. This is not easy. During the past summer the Bureau of Entomology has sent out something over 10,000 circulars to postmasters, asking each one to give the names of bee-keepers in his vicinity. All of the returns have not yet been received, but each report will probably average five names. The same plan could be used for a request from a government department for all the postoffices in the United States (over 60,000 in number), if necessary; but our very limited office force will not permit it. In some parts of the country we have been able to get extensive lists of bee-keepers from other sources.

After the names of bee-keepers are received, the next step should be to send out a notice to each one living in a county where either disease exists, advising him of that fact, and sending a circular on the subject so that he can become familiar with the symptoms and treatment of the disease. We have not been able as yet to do this in many cases, but hope to continue the work in the future.

I have briefly outlined this scheme, not to advertise what the Bureau of Entomology aims to do nor to make elaborate promises, but merely to indicate the fact that, if diseases are to be controlled, it will take work to bring it about. To sit by and expect an inspection law to wipe out disease is not the part of wisdom. It has never done so yet.

Nor have I indicated all that must be done. I should be very much pleased, however, if by this outline I could induce each person

interested to do his share for the furtherance of the industry. The Bureau of Entomology will continue to do what it can with the present limited funds, but it would be just as unwise to leave too much to us as it is to expect too much of an inspector.

Washington, D. C.

CASCARA AS A HONEY-PLANT.

A Good Yields in Sonora, Cal.

BY A. D. HEROLD.

The inquiry on page 677, Nov. 1, and your query regarding cascara sagrada as a honey-plant, have come to my notice. Cascara is, I may say, our main honey-plant in this locality. It is in full bloom about 20 days after apple-blossoms are gone, and lasts 25 days on an average; yet there are stray bushes near ditches or cultivated ground which send out new shoots of bloom, and these are visited by the bees until late in September or October.

I have sent you this day a sample of the extracted, which is, I should say, 95 per cent pure cascara. It is blended with spring flowers and grasses, and out with holly, so it is hard to get the full crop of pure cascara. However, we get more honey from cascara than from any other one plant in this vicinity. It is so dark as a comb honey that it is a poor seller to those who go on looks alone. We prefer it on our table to any other honey. I have customers who will take no other. It is not purgative, but one of the best remedies for chronic constipation known. I have never known any of the pure article to granulate under any conditions. Inclosed with the honey are some of the seed and leaves. It is not an evergreen, but it is as green as the bay-tree all winter, and until late in the spring. The new buds push the leaves off, and at the opening of bloom it is nearly free from leaves.

I think it would stand the winters of Ohio if protected while small. It is a rapid grower, a most prolific bloomer, producing both honey and pollen. It is just fun to see the bees working on it, the flowers are so thickly set together—shallow, and accessible to bees to work on in their great haste. In the evening they file out of their hives with pollen on their legs, eager for another load before night overtakes them—something I have never noticed when they worked on any other flora.

I think it is a great honey, and could be sold at a higher figure if properly advertised. I have had customers send it to their invalid friends in Ohio, Indiana, the Dakotas, and Pennsylvania. I had 1000 lbs. of extracted and 300 lbs. of comb from this plant, from 44 colonies, spring count.

Sonora, Cal., Nov. 8.

[If cascara honey can be used as a medicine the facts ought to be known for the benefit of the few who have need of it. It ought to command a big price.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE NEBRASKA STATE FAIR.

The apiarian exhibit at the Nebraska State Fair this year was of unusual excellence and largely increased size, taxing the limits of the building assigned for that purpose. Seven exhibitors, representing every section of the State, crowded the shelves to the limit, and a petition has gone to the management for increased space for the coming year, as well as for premiums in new classes, which will, no doubt, be forthcoming.

The substantial special premiums offered by The A. I. Root Co. and others have stimulated competition, and the two splendid silver trophy cups given by the State fair management and the Nebraska State Beekeepers' Association, added materially to the attractiveness of the exhibit, and the zest of the competitors.

One of the largest individual exhibits was that of the Trester Supply Co., of Lincoln, the oldest exhibitors at this fair. This splendid exhibit, in point of size and general excellence, probably the best they have ever shown, reflects great credit on this concern, and won the special silver trophy cup offered by the management of the fair for general display.

The most interesting display from the point of general interest was that of Frank G. Odell, of Lincoln, representing Roselawn Apiaries. Mr. Odell showed a collection of four hundred mounted specimens of honey-producing plants, the largest ever shown at any State Fair. This list will be published by the Secretary of the State Board of Agriculture. It won the first premium in cash as well as the special first premium offered by the *Bee-keepers' Review*. Mr. Odell showed the prize-winning collection of bees and queens, securing first in all competitions, and three specials offered by The A. I. Root Co. for bees, with his showing of fifteen observatory hives and five different races of bees.

The display of beeswax and comb-honey designs was especially interesting, this concern showing a model of the Wright aeroplane made of beeswax, and the words "Roselawn" in comb honey, both of which easily won first premiums. Mr. Odell won all specials for which he entered, including a Root ball-bearing extractor, a Hatch wax-press, a copy of the ABC in German, and five pounds of Weed process foundation offered by The A. I. Root Co., besides the largest individual winnings of cash premiums of any exhibitor in the department.

This exhibitor also gave two lectures daily on economic apiculture, with demonstrations with live bees in a cage, being especially employed by the management of the fair for that purpose. These lectures were attended by great crowds who listened eagerly to the attractive side of bee-keeping as presented by the lecturer.

A special honorary diploma was awarded by the fair management to Mr. Odell as expressive of their appreciation of his labors.

Lincoln, Neb.

G. M. PLUMB.

SHALL WE SHAKE THE QUEEN IN PRACTICING "SHOOK SWARMING"?

In the ABC and XYZ the Doolittle method of preventing swarming is treated on p. 416, but I do not see where any thing is said as to how the queen is transferred from the old hive to the new unless it is intended to "shake" her off with the rest of the bees and allow her to find her way into the new hive with the others; but in all I have heretofore seen relative to the handling of queens there is so much caution advised, for fear of doing her some injury, that this seems like rather rough treatment for so delicate a character.

Greenville, Miss., Dec. 9.

N. B. JOHNSTON.

[When we speak of shaken or "shook" swarms we seldom make any reference to the queen, leaving the matter of how the queen gets into the hive at the option of the apiarist. Probably there would not be one time in three or four hundred colonies shaken where the queen would be lost if the bees were shaken in front of the entrance without paying any attention to the queen. There is a possibility, however, that she might be injured if she were in the height of her egg-laying; but as she will fall, in almost every case, with a bunch of bees she would receive no harm. As a general practice we might say it would be advisable to pull out the first two or three frames, and, after the queen is located, set the frame she is on to one side; shake all the other frames in front of the entrance

then, last of all, take the queen off the frame and place her among the bees that are running in, after which shake the frame. But if there is a large mass of bees on the ground in front of the hive it would do no harm to shake bees, queen, and all.

On the other hand, there is a slight objection to the apiarist picking up the queen and handling her at all. The contact of the human fingers sometimes changes her body odor to an extent that will cause the bees to attack her. It would, therefore, be our candid opinion that there would be no more loss in shaking without paying any attention to where the queen was in the hive than if we take the time to hunt her up, pick her off the comb, and let her run in with the bees.—Ed.]

AN APIARY DESTROYED BY FLOOD.

One of the worst storms in the history of this section occurred Sept. 20, lasting more than 24 hours. It did great damage to property and life. We have a large body of water in our front, the Mississippi River, and a big lake at our rear. The wind backed up the lake water, placing mine water, and submerging land that has heretofore been free from overflow. One of my apiaries of 75 or 80 hives, in prime condition for wintering, has been completely destroyed. The water is yet on the land; and as there are snakes in and around, it is any thing but pleasant to work gathering up the boxes and combs.

I have a few hives at my home, mostly nuclei, and I doubt if I can carry them through winter. The apiary that was lost gave me all the extracted I got this year, so I have nothing to look to next year. It took 20 to 25 years to build up and 24 hours to destroy. That knocks the grit out of the best of us.

New Orleans, La., Oct. 11.

G. P. HOWELL.

[We were very sorry to learn of your loss through flood; but we would draw your attention to the fact that you can make very rapid increase with these combs and hives, and you will probably find that the combs themselves are not very badly damaged. It was Mr. Adam Grimm, who, along in the early 60's, made enough money out of his bees to establish a bank. When asked what he would do if he would lose all of his bees during the winter he said, "I would show you how quickly I could get them back again with all these drawn combs and hives." The fact of the matter is, one can make a very rapid increase when he has the full equipment, and this you undoubtedly have. If the combs happen to be filled with mud or dirt, take a hose and wash them out with a spray of water as best you can, then give them to the bees as fast as they can take them.—Ed.]

ABSORBENT CUSHIONS BEST FOR DAMP WINTERS; WHY BEES CLUSTER TOWARD THE FRONT OF THE HIVE.

On page 654, Nov. 1, the editor refers to the difference of experiences and opinions respecting the top covering for outside-wintering bees, and seems inclined toward tight or sealed covers. Always having wintered my bees outside, it has been my practice to use porous packing over the frames, and with most excellent results so far as the packing is concerned, excepting in a single instance, if I remember rightly. The material used has been dry planer shavings. The exception was the use of a sack of sawdust about 6 inches thick, very closely packed over one of the strongest colonies. They came out in the spring in very bad condition because of moisture in the hive. I thought that possibly the cover might have leaked, but found this not the case. The under side of the sack was wet as well as the hive; hence the conclusion that it was the closeness of the packing.

It occurs to me that, in a dry atmosphere, bees might be wintered safely outside under a sealed cover; but in a winter of very much moisture a porous covering of proper material, such as planer shavings or ground cork, which might be better, would, it seems to me, be the proper material to use. There is another factor to be reckoned with in my case, perhaps. The covers are four to six inches above the packing, thus leaving a dead-air space above the cushion, which I deem very desirable in outside wintering.

In reply to a correspondent who asks why bees cluster in the front part of the hive, like Dr. Miller, you frankly say, "I don't know." Permit me to suggest a reason for bees doing this. During the summer time, when brood-rearing is going on, there is a tendency to put the brood forward and the honey at the back and above. This is partly owing to the fact, I think, that the wind blowing into the hive in early spring when brood-rearing commences strikes across the hive under the frames, then rises, making it more dif-

ficult to maintain an even temperature than at the front, and this may account for bees doing the same thing during cold weather. Hives being placed fronting either east or south, the warmth of the sun has likely something to do in attracting the cluster in the winter toward the front of the hive, especially in the single-walled hive.

WM. M. WHITNEY.

Batavia, Ill., Nov. 17.

SOME OLD SECTIONAL BEE-HIVES OF A CENTURY AGO.

In looking over some of my old books I found an encyclopedia, published in 1821. It has about 15 pages devoted to bees and hives, and is quite interesting. There is a cut of a divisible hive very much like those of to-day except in shape, being square, with fixed straight bars instead of movable frames. It tells how to make artificial swarms with this hive, very much as we do to-day, and quite a lot of queer ideas in regard to bees.

F. T. BROOKE.

Staunton, Va., Nov. 22.

[The article to which you refer is possibly a description of what is known as the Nadir or Eke hives that were used in Europe some hundred years ago, and, in fact, are still in use. This whole system has been written up in our columns at numerous times. If you will read over the article carefully you will probably find either one of the names referred to. That old system was very similar in many respects to the divisible-brood-chamber hive that is in use to-day, with this difference, that the combs in each section were immovable; but the manner of handling the sections was somewhat similar to that used with the present hives.]

By turning to page 247 of the latest edition of our A B C and X Y Z of Bee Culture you will find also a description of what is known as the Stewarton hive of 1819. This had bars for supporting the combs with glass strips between. It was also described in *Cheshire*. It is possible that the Stewarton hive is the one that is described. It is eight-sided, split up in sections.—ED.]

BEEES IN WASHINGTON COULD WORK EVERY DAY IN THE SEASON IF THE WEATHER CONDITIONS WERE MORE SUITABLE.

We are located in the southern part of Washington, in the foothills of the Cascades, on the western slope. It is an ideal place for bees so far as honey-producing plants are concerned; but, of course, the weather conditions are not always ideal. We have a great deal of rain here, and last season there was too much cool and cloudy weather during the time for a honey-flow, so that the nectar was not properly developed in the flowers, and consequently the crop was almost a failure. The honey-bearing flowers come on in this order: Willow; vine maple, which bears an abundance of nectar; wild blackberry, wild vetch, salad berry (a good honey-bearer in its season); then the famous fireweed. So you see we would have a continuous honey-flow from April 1st until Sept. 1st provided the weather conditions were right.

The fireweed honey is delicious, very white, and of fine flavor. It ranks first in market here, and I believe it would the world over.

During the season of 1908 we had 40 hives of bees,

and sold \$700 worth of honey. At the present time we have 55 hives in fine condition for winter, and we are building great hopes for another season.

We do not put our hives in winter storage here. They do very well when left out in the open.

Brush Prairie, Wash., Nov. 20. MRS. D. N. BRACK.

DISPOSING OF LAYING WORKERS BY TEMPORARILY UNITING THE COLONY WITH A STRONG QUEEN-RIGHT COLONY.

On page 674 is given a quick way of ridding a hive of laying workers. For many years I have practiced a much quicker way. It rests on the assumption that a queen-right colony will not tolerate the presence of fertile workers. The hive to be treated is placed late in the evening quietly, and, if possible, without smoking, over a strong queen-right colony whose supers have been removed for this purpose. After the two colonies are thus united, the supers are replaced on top of all. Next morning the hives are separated, and, if thought best, made to exchange stands. Late in the evening of the same day the smoker is filled with sasfras chips, and a queen run in. In this temporary union the queen-right colony should always be the under hive for the safety of the queen.

Otterville, Mo., Nov. 18.

E. W. DIFENDORF.

GOOD PRICES SECURED BY SELLING HONEY EARLY.

By getting my crop before the honey-eating public at an early date I have found that it pays well, for I get 17½ cents per section for all my comb honey, and \$2.00 per gallon for my extracted honey in glasses. The demand is heavy, for I sell direct to the consumers and not to the merchants.

The merchants in the grocery business are often to blame for poor sales, as they sometimes store fine comb honey in dark damp cellars, near pickled meats, fish, cheese, etc., and the customer complains about the bad flavor. I believe all producers should caution grocers against storing honey in the cellars and against handling it carelessly, as this accounts for so much breakage, and the honey comes in contact with dirt and dust.

Chico, Cal.

SYLVIVUS J. MORRISON.

NEW YORK SERGEANT OF POLICE IN CARTOON.

Mr. E. R. Root:—Herewith find inclosed a cartoon of myself which I received from some unknown source, and which I consider clever enough to be reproduced in *GLEANINGS*. I am the son of Mr. N. D. West, bee-inspector of New York State, and you will remember me as the boy who showed you through his apiary when you were on a bicycle trip through Schoharie Co. in 1890. I was appointed a patrolman in New York by President Roosevelt when he was Police Commissioner here. I am now sergeant of mounted police, and continue the bee business on a small scale in New York. The cartoon is supposed to represent me in police uniform looking at my bees. You will note in the cartoon that the queen wears a crown, and that I, farmerlike, have a straw in my mouth.

EDWIN H. WEST.



WHAT STYLE OF HIVE TO ADOPT.

1. Would there be any advantage in locating an apiary on a hill from which one could see the surrounding country for several miles?

2. What make of hive would you recommend in the out-apiary, for extracted honey?

3. The most successful bee-keeper I know uses the eight-frame hives, and tiers them up. I have started that way. Would you advise me to change, as I intend to go into the business more extensively?

4. Which do you think better—deep or shallow extracting-frames?

5. On page 695 J. E. Hand says, "raise up the whole hive and place a super of empty combs under it." Why wouldn't it be better to put this super of empty combs on top of the brood-chamber instead of under it, as the queen's natural instinct is to go up?

In this section the first surplus honey comes from basswood, about July 10, and we have a good fall flow. Elk River, Minn., Nov. 23. FRANK MORGAN.

[1. In some localities, we believe it is a distinct advantage to have an apiary located on a sidehill commanding a view of the valley and the hills beyond. The late E. W. Alexander claimed that one reason why he was able to have 800 or 900 hives in one locality was because his bees could see the white patches of buckwheat several miles away. He believed that bees have a sort of telescopic vision, and that, when they can see the white patches, they will go further for honey than they would were of view shut off by buildings or shrubbery or trees. Of course, one might argue that the bees could fly high enough to look over every thing. But they will not do so if they can avoid it. Bees going to and coming from the fields always fly as low as possible, rising only enough to clear obstructions.]

2. That depends on the man and conditions. Generally speaking we would advise the ten-frame hive rather than the eight-frame for extracting, for the average farmer or bee-keeper. If one has made a special study of the sectional or double-brood-chamber hive we would advise the shallow extracting-super. J. E. Hand, Louis H. Scholl, and some others consider this hive the best for extracting. The main advantage is that the storage room can be more gradually increased.

3. If you have started with the eight-frame hive we would advise you to stick to it. The gain would not be enough to warrant the change.

—This question is referred to J. E. Hand for reply. —ED.]

DETERMINING WHETHER A COLONY IS QUEENLESS BY THE PITCH OF THE HUM OF THE BEES; LOCATING THE FRAME CONTAINING THE QUEEN BY SOUND.

On page 192, April 1, is a quotation from Mr. F. J. Miller on finding the queen by the lowness of pitch of the note made by the bees. This is a very interesting thing; but it requires an educated ear. As I have been a violin-player for something over 20 years my ear is very correct. My experiments this summer would indicate that not only will this low-toned hum tell where the queen is, but whether the colony has a laying queen or not. I could not make a nucleus formed with queen-cells produce this tone until the queen had begun to lay, and I have not yet failed to make a queen-right colony produce it. If you will blow a little smoke in at the entrance, and tap the side of the hive three or four times lightly, then take off the cover as quickly and quietly as possible, listen carefully, and note the point where this low tone starts, you will find the queen right at that point. It is seldom that one can locate this point closer than the space between two frames; but it has been my experience that, if these two frames are taken out, the queen is pretty sure to be on one of them. It seems to me that if this method of telling whether there is a laying queen or not will always work, it is a good one—no opening of the hive, no taking-out of frames for examination. Just smoke the entrance a little, and tap the side. If they sing low, all right. If they just buzz they need attention. P. W. RICHARDS.

Mast Yard, N. H., Nov. 6.

It is well known that a queenless colony, when disturbed, will give off a roar or hum of distress. Some colonies not queenless, under a state of excitement will give off the same noise. As a rule, any queen-right colony should give off a very low and contented hum, but we doubt whether the average bee-keeper, at least, would be able to determine the approximate location of the queen by the method you describe; but it is a fact that bees will *sometimes* indicate her position by their general behavior; but when the hive is

opened, and a little smoke is blown over the frame, the natural status of the colony is so changed that ordinarily we can not tell, for the moment at least, in what part of the hive the queen is.—ED.]

FOLDED PAPER INSTEAD OF CHAFF TRAY.

I see that you are on the right track on wintering your bees on summer stands with the deep telescope cover. But you do not need that tray on top, or at least I do not out here. I have wintered my bees the last ten years with a deep telescope cover with paper laid on top of the super cover (sealed down), the paper reaching down on the sides and ends, some with old carpet on, but mostly newspapers. I have not lost a single colony.

The space under the frames is $\frac{3}{4}$ inch. I take a strip of block that reaches clear across the entrance, and cut out a notch $\frac{3}{8} \times 6$ inches, and lay that in front, leaving the entrance $\frac{3}{8} \times 6$ in. Another thing, I have never had an entrance clog with dead bees nor had to clean dead bees out; but in the spring I lift the hives off the bottom-boards and clean the cuttings of the comb out. This is the best way and the only way to winter bees. H. MANSFERGER.

Lewistown, Mo., Nov. 22.

TO PREVENT BEES FROM FLYING OUT OF THE ALEXANDER FEEDERS WHEN THE SYRUP IS POURED IN.

In your issue for Oct. 1, p. 611, Mr. H. A. Moody gives his plan for keeping bees from rushing out when using the Alexander feeder. My plan is this: Bore a $\frac{3}{4}$ -inch hole about the middle of the feeder-cover. Lay a small block over the hole and drive a small nail through one corner of the block into the cover to make a hinge for the block to swing on. Provide a funnel to fit the hole, and a cup that holds the amount you wish to feed. With the end of the funnel push the block around out of the way, sliding the funnel over and into the hole as you do so, and pour in the feed. Not a bee need escape.

Beresford, Fla., Nov. 4.

C. S. GAILBREATH.

BEE-SHED MADE OF BALED HAY.

Would you please advise me whether a bee-house laid up of baled hay would be warm enough in this locality to winter bees successfully?

Forest City, Iowa, Dec. 3.

RUFUS R. WAGNER.

[We have had no experience with bee-houses built of baled hay, and we do not feel competent to advise in regard to the matter. It would seem, however, that such a building should be warm enough, providing the cracks between the bales, etc., could be kept covered up.—ED.]

THE FLOUR METHOD OF INTRODUCING A FAILURE.

I have tried the flour method of introducing queens time and again, and not in a single instance have I been successful. I could not decide to give the plan up, as I realized that, if I could but learn to manipulate it successfully, it would be of great value to me as I intend to install a great many queens next spring. I should like very much to know what Dr. C. S. Miller thinks of the plan. J. B. MARSHALL.

Big Bend, La., Nov. 25.

THE FLOUR METHOD OF INTRODUCING QUEENS NOT A SUCCESS.

I tried this plan of introducing, but without success. The bees and queen get busy with the flour, so there is no notice taken of the new queen at first; but in every case as soon as they got rid of the flour they balled the queen.

Merino, Col., Nov. 22.

T. J. LANDRUM.

HONEY FROSTING.

Here is a good plan to make honey more suitable for those who can not eat it ordinarily. Boil some comb honey, or, better, extracted, until it is crisp when cooled. Dip in and well cover any plain or fancy crackers, and when cool they are fit to serve.

Seabright, N. J.

HERBERT S. HALE.

SEALED COVERS UNDER GROUND CORK.

I use sealed covers with a super on top filled with ground cork, such as grapes are shipped in from Italy, etc. Dampness in the hive is thus reduced to a minimum, and the bees winter well.

Philadelphia, Pa., March 28.

R. P. ZEBLEY.

OUR HOMES

By A. I. Root

Every man that striveth for the mastery is temperate in all things.—I. COR. 9:25.

WHAT SHALL WE EAT TO "KEEP WELL AND LIVE LONG"?

It rejoices my heart just now to see how the pages of our magazines and other periodicals are gladly thrown open to let Horace Fletcher tell us of his discoveries in the way of simple diet. Much good is certainly coming from it. The trouble is, that so many are unwilling to give up the old way and adopt the new. But a wave of reform is fast spreading over the whole wide world; the need of reform seems to be more appreciated just now than ever before since the world began. Somebody has suggested that, a few years ago, the flag that waves over the United States was saved from being trampled in the dust by the patriotism and self-sacrifice of the North; but in God's wonderful providence it seems now as if the tables were being turned, and that the *South* were now about to take the lead and teach the North some wholesome lessons. The North, years ago, took the lead in abolishing slavery; but just now the South is, without doubt, taking the lead in abolishing, if not a greater evil, one just as great. The tyranny and dominion of strong drink and the liquor forces die so hard that it looks very much as if troops and soldiers would have to be called out to enforce our just and righteous laws. In Atlantic City we have recently had an illustration of this. Now, while it seems as if the influence of every man and woman, and perhaps of the children too, is needed to preserve and enforce our laws, it seems to be more and more evident every day that every man, woman, and *child* should be exhorted as never before to rule his own appetites and other low passions. May God be praised that President Taft had the grace and courage to decline to take a glass of mint julep that was prepared especially to give him a hospitable welcome. We are told that he smelled of the mint, and probably admired its aroma; but he set the glass down without even tasting the intoxicating beverage.

Now, the success of Fletcher's and Terry's teachings depends on self-control. When you have discovered that certain things disturb your digestion, let them alone, no matter how much the effort costs you. I am often tempted to taste of apples, grapes, and other fruit between meals; but I have learned by experience that bad results are sure to follow; but if I go and get a drink of nice cool boiled water, which I always keep on hand, the longing for fruit soon passes away. Of course, I can not prescribe for other people; but it is certainly very much better for myself to take nothing in my mouth but pure water except at meal time. In the same way, I am tempted, like other people, to have a piece of pie or dessert when it is offered me after I have already eaten as

much as is good for me. When you are visiting, and you have reason to think the good housewife has prepared a little something extra, perhaps because of your presence, it seems almost uncivil to refuse to taste pie, ice-cream, or other desserts; but I am sure it is best. My strength holds out ever so much better when I pleasantly tell the good friends who have invited me that I have made an excellent dinner, and have already partaken of all that is good for me. These things, as I have said, require the exercise of self-control over the appetite, and other things in the same way. Let your motto be, not what you *want* or *greatly desire*, but what is *best* for you. Let *duty*, not *inclination*, decide the matter. Terry has told us that it is sometimes necessary for him to exercise self-control in order to stick to his uncooked wheat when there are so many other things round about him in such profusion. But he got back his health and a robustness of mind and body beyond what falls to the lot of common mortals by exercising self-control, and eating that which he knows from past experience is best for his health. After he has for quite a period exercised this self-control he tells us that he enjoys the uncooked food more than he ever enjoyed eating anything before in his life. I think he is recognizing, however, that no two of us require exactly the same kind of diet. Some of his followers are eating common wheat just as it grows on the farm; but they cook the wheat in a corn-popper or parch it slightly, then grind it in a little cheap mill, and eat it that way. For variety they sometimes add a small proportion of popcorn. And, by the way, I have found that popcorn is a very wholesome food, especially if it is put through a little mill, and then eaten with milk. Fletcher tells us that, when he performs his great athletic feats, he eats nothing but a cereal and milk, and a little lump of maple sugar. I am well satisfied that maple sugar is more wholesome than the refined sugars in common use. Fletcher says it does not make so much difference what cereal you use, providing it is thoroughly chewed. By the way, some people think that eating slowly means chewing slowly. Not so. Fletcher says that he chews just as fast as he can make his jaws go, especially when in a hurry. Get every thing into a liquid state, or semi-liquid, before swallowing it.* If your

*In the last issue of the *Practical Farmer*, Terry tells us more about that Quaker City mill No. 4 that they use to grind their graham flour and other things. The mill cost all together \$3.80. The address of the company is A. D. Straub & Co., 3739 Filbert St., Phila.

By the way, you are probably reading up about that terrible disease called "pellagra." Well, *McClure's Magazine* says it is caused principally by moldy corn that is used to make corn meal. Sometimes some millers purposely put in a little moldy corn to get it off their hands. They think the quantity is so small that nobody will notice it, and that it will do no harm. And it is well known that it is almost impossible to get genuine graham flour on the market. Millers and middlemen seem to think they can dump almost "any old thing" into graham flour, and it will be all right. The remedy for this terribly bad business is to get one of these little mills and make your own corn meal and graham flour from the best corn and wheat of your own selection.

teeth are poor, the little mills that you use in the home, described by Terry, are an excellent aid. He uses them for grinding nuts as well as wheat and other things. It is all right to assist the teeth in every way you can; and I think a little cooking—at least many times—not only assists the teeth, but renders the food more nourishing.

Fletcher differs from Terry in saying one may eat whatever the appetite calls for particularly. In other words, let nature decide, as far as you can conveniently, what she wants to make a balanced ration. Terry makes a balanced ration of wheat, fruit, and nuts; and, if I am correct, Fletcher, especially since his repeated visits at the Battle Creek sanitarium, is leaning toward an exclusively vegetable diet. Somebody has suggested that his directions, to take whatever the appetite craves most, might include beer and even whisky; but you all know that Fletcher never intended to say any thing of that kind.

Now, I want to bring in another one of my "discoveries;" but let me digress a little before I do it.

There is now a great craze to know how to feed poultry so as to get the most eggs; and most of us have discovered, I think, that a change of diet helps to make the biddies contented and happy, and, as a consequence, bring more eggs in exchange for the food provided. Let me suggest that you make an experiment. Teach your fowls to eat lettuce if they have not already learned to do so; and, finally, give them all they want, no matter if it does cost something; and if it does not immediately increase the number of eggs I shall be much mistaken. After they become a little tired of the lettuce, cook up some cull beans and mix them with bran middlings or meal so as to get them started on a bean diet. You will soon find that the beans, in a like manner, give an increase in the egg output. Then try lean meat or ground bones. Do not give them too much at once, but accustom them to the new diet gradually. This meat diet almost always produces a marked result; and all three of these different foods are equally beneficial in growing chickens. When I was on the island a large brood of chickens were chirping around as if they wanted something they did not have. I finally concluded they wanted animal food, and gave them all the fresh fish they would eat. They were just crazy for it; and after they had eaten enough the whole thirty or forty went and sat in a row on a log. Their natural craving was satisfied, and they were contented and happy; and since that time I have seen my chickens do the same thing here in Ohio. When they seem to be uneasy and dissatisfied, try different things. When you hit the spot you will see your chicks go and roost on the fence or on a log, in a long row, contented and happy. Nature has been satisfied. When they do this they will grow and keep well.

Now, I hope our vegetarian brothers and sisters will excuse me if I suggest that, so far as my experience goes, we "humans"

are much like the chickens. It looks to me as if there were times when growing children and elderly people need animal food just as the chickens do. There may be, however, some substitute that will answer equally well; my discovery comes in right here. Mrs. Root complains sometimes that I do not eat the things I have been calling for all along after she has got them all ready for me. For instance, for quite a time I thought that shredded biscuit was just the thing; and I was not satisfied unless I had it at every meal. Finally I "switched off" on to the Battle Creek graham crackers, and I almost lived on them. (It occurs to me right here that one of our children said to somebody a little time ago that I almost "lived on" apples, and if you were to see me eating a great plateful every evening when looking over my agricultural papers you might think that apples were the "chief part of my diet.") Well, after I had been on the graham crackers about so long I took a start on puffed wheat, and it was puffed wheat and nothing else, three times a day. After that I took a great fancy to hulled corn—you know I told you about the hulled corn. Well, all of these things did me good. The change did me good. It gave me new vigor, almost as well as new strength of body; but three or four weeks ago, in some way I did not hold out, either in mental or physical strength, and I have had an increased amount of mental work lately in order to prepare for my trip to Florida. Evidently, nature was admonishing me, just as she admonished the chickens, that *something* was lacking. I tried my Hamburg steak, and it helped me somewhat; but my vigor and enthusiasm did not hold out clear up to the next meal as I wanted them to do. Just then I saw a lot of nice chestnuts in a grocery, for "chestnut time" had come. They were 25 cents a quart; but even at that price the expense was nothing compared with what people pay for stuff in bottles at the drugstore. I have often explained that apples are my medicine, and I still consider them one of the very *best* medicines in the world. Well, I bought two quarts of these chestnuts and put them in a pan in the oven in order to "cremate" the "live things" that might be inside of some of them. They were left over a slow fire until they were just right. At supper time I said, "Sue, there has been some discussion as to what kind of food is the most delicious that God ever furnished to his children. I think now that I shall put roasted chestnuts at the very top of the list."

After a few days of having a good-sized handful of chestnuts at the close of every meal, I can add that not only were they the most delicious food I ever tasted, but they seem to be, in my case, a most strength-giving food. I dictate and answer my letters with more energy and zeal than I have before for many years; and I feel more like running a race with the boys, and climbing the ladders to get to the top of that great warehouse where they are just now putting on a cement roof after having put in two

floors below, entirely of cement, without a supporting timber in the whole structure, or any thing that can burn and let the building down in case a fire should start inside.

It looks to me just now as if the chestnuts were not only a substitute for the meat I have been in the habit of using, but perhaps better than meat—yes, a good deal better; and this comes exactly in line with what Terry has been trying to teach—that the various nuts that can now be purchased in the market may supply the elements that make up a balanced ration without using any meat at all. If you can enjoy them as much as I do you can certainly thank God for the nuts; and it looks as if there might be *several* reasons for so doing, instead of one.

Now, friends, there are fierce passions that assail every one of us—more fierce by far than the appetite for something to eat or drink; and, what is of equal importance (I do not know but I should say of *more* importance) we should be evenly balanced and well *spiritually* as well as physically. The loving Father has laid the responsibility on all of us to hold these passions in check; and we can not be at all worthy of being called a creation in his own image unless we do exercise this self-control. Sometimes we are inclined to think it is “pretty tough” to be obliged to put up with our environments when others have so many things, and seem to do as they please. But remember the promise, “He that is faithful in few things shall be made ruler over many things.” It may seem to you that your life is rather monotonous, and that you are having a hard time of it. But do not be in a hurry. Study God’s holy word; come to him often and tell him your troubles, and ask him to guide your footsteps, and you will surely have your reward.

TEMPERANCE.

There are two particular things I am very much in sympathy with—the present war against the liquor-traffic and the speedy “expose” of all swindles and humbugs on an honest and unsuspecting public. Now let me explain that, while I am heart and soul in favor of prohibition, I am not at present a member of the political Prohibition party. God seems to have called *me*, at least just now, toward pushing and helping the Anti-saloon League. Nevertheless, I wish every one of you would send for a sample copy, if nothing more, of the *National Prohibitionist* (of Chicago) and see what it is doing to show up the outrageous humbugs and frauds of the liquor people of the present time. I wish especially you could all see the “cold-chiselled facts” furnished by the department at Washington, D. C., as given in the *Prohibitionist* of Nov. 25th. Editor Ferguson may not *always* be exactly right; but he is *tremendously* correct this time, and may God be praised that the manufacture of liquors is falling off.

HIGH-PRESSURE GARDENING

By A. I. Root

THE WONDERBERRY, AGAIN; A LETTER FROM JOHN LEWIS CHILDS.

Mr. A. I. Root:—I notice in your issue for Nov. 15 that you say editorially that the wonderberry was not created by Mr. Burbank, and that it was already known as the “garden huckleberry.” I do not suppose you wish to make any misstatements, and will, therefore, be glad to be corrected; and I would say that Mr. Burbank *did* create the wonderberry, which is a hybrid between two species of *Solanum*. I do not think anybody doubts that. It is entirely different from the garden huckleberry or the wild nightshade, which you must know if you have grown the two and compared them. It had never been grown anywhere before Mr. Burbank originated it, and I introduced it last year, notwithstanding all reports to the contrary.

I have run down every claim from any part of the country that has been made that the wonderberry was growing there wild or otherwise, and I found in every case that it was an entirely different plant.

My reputation as a seedsman is worth more than any thing I could make out of the wonderberry or a dozen novelties like it; and it is not idle talk when I tell you positively from my own knowledge that the wonderberry is a new, distinct, and very valuable fruit.

JOHN LEWIS CHILDS.

Floral Park, N. Y., Nov. 29, 1909.

We are certainly glad to get and give place to the above letter; but I would beg leave to suggest that this matter is not to be settled by Dr. Britton, the botanical gardens, nor even Dr. Galloway (of the Bureau of Plant Industry of the United States), but by the great public who have purchased seeds and grown the plants. In answer to our call, and that of the *Rural New-Yorker*, great numbers of reports have come in, and berries and plants have been mailed us grown from the seeds purchased of Childs. Now, please note. These berries and plants from the *wonderberry seeds* have produced, I might almost say, quite a *variety* of plants and *berries*—some blue, some black, some large, some small, etc., all the way from the wild nightshade to the garden huckleberry. See Galloway’s letter, already given in GLEANINGS, p. 585, Sept. 15. Childs says in his letter given above, “It has never been grown anywhere before;” but what does the great public say (through GLEANINGS and the *Rural*), from north, south, east, and west? Again, Childs says, “Burbank *originated* it,” and both Childs and Burbank advertised it as a *new thing*; but has this same great public agreed that it was *not known before*?

At least *some* of the seeds Childs sent out produced the old well-known garden huckleberry.

If the general verdict of the great public at large who have purchased seeds of the wonderberry of friend Childs is that they have found it a *new* fruit not known to them before, I humbly beg pardon of both Childs and Burbank.

I know how customary it is for seedsmen introducing novelties to exaggerate, and, perhaps, thoughtlessly misrepresent. May God help me that, after my past years’ experience, I may be more careful in every way lest I use extravagant expressions.